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THE NASAL SEPTUM.*

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In view of the prominent position which operations on the septum are at present taking in rhinological literature, it would seem important that more careful study should be devoted to its anatomy; especially embryological and pathological. Without an intimate knowledge of the structures entering into the formation of the septum, and of the manner in which they are affected by mal-development, disease, etc., intelligent treatment is hardly possible.

The nasal septum reaches from the apex of the nose to the rhinopharynx and separates the interior into two fossæ. Anteriorly it supports the external nose, and the part under the nasal bones may be wholly of bone, partly cartilaginous or entirely cartilaginous. Its posterior edge is almost perpendicular, but varies frequently in this respect, and this variation must be looked upon as a lack of development, for in infancy the edge is almost horizontal. While the vomer and the perpendicular plate of the ethmoid bone constitute the greater part of the bony septum, the crests of the superior maxillary, the nasal and palate bones, and the rostrum of the sphenoid bone also enter into its formation. In addition to these, we have the inferior vomer, a small bone lately described by Rambaud and Rénault, which rests upon the intermaxillary bones and forms their crest.

The cartilaginous portion of the septum is composed principally of the quadrangular or septal cartilage; in addition we have the

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columnar cartilage, and the middle projections of the upper lateral and lower lateral cartilages, but these are comparatively unimportant. The unossified strip of cartilage lying between the vomer and the perpendicular plate of the ethmoid bone in the vomer sulcus is a process of the quadrangular cartilage, although here named the sphenio-ethmoid cartilage, as if independent. In a small percentage of cases, a strip of cartilage, instead of the perpendicular plate of the ethmoid, supports the nasal bones, but this also is simply a part of the quadrangular cartilage.

The membranous septum is that portion at the apex of the nose between the two vestibules not occupied by the cartilages.

The mucous membrane of the septum presents certain physical peculiarities. In the first place, in the upper half, or so-called olfactory region, its color differs from that of the lower half, or respiratory region, in being paler and somewhat yellowish in tone even during life, owing to the pigment deposited in the epithelial cells. In the second place, the mucous membrane of the septum varies greatly in thickness. Thus it is thicker at the articulations of various bones and cartilages, and also in the lower half of the nose, whilst it is quite thin in the vestibules and in the olfactory region. Of special interest to us from a practical standpoint, however, are the following physiological thickenings of the septum. Just below the anterior end of the middle turbinal we find the so-called tubercle of the septum, an enlargement the size of a dime. This is formed by a deposit of gland structure at this point, though we also find a thickening of the underlying cartilaginous or bony framework in the shape of a fusiform enlargement. Bresgen and Mihalkovics claim that erectile tissue also enters into the formation of the tubercle, but Zuckerkandl observes that this description of Bresgen's is on a par with many of his so-called discoveries, and that no erectile tissue can be demonstrated. The tubercles of the septum frequently become enlarged and interfere with the direct current of air through the olfactory clefts. Their importance lies also in their hindering proper inspection of the upper regions of the nose, and not infrequently they are mistaken for deviations of the septum, or, by the careless observer, for enlargements of the middle turbinal, or even for polyps. Other more or less constant thickenings of the mucous membrane are found at the posterior portion of the septum. These are the so-called septal folds, parallel ridges of mucous membrane, especially prominent in the six-month embryo, but often hypertrophied in adult life, even so much so as to interfere with the patency of the choanæ.

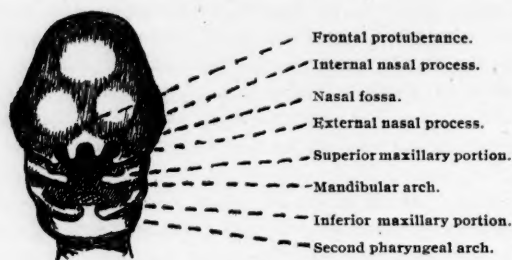
In one case I found the enlargement so great that it projected into the mouth of the Eustachian tube, and was probably the cause of the otitis media present on that side.

At the articulation of the vomer with the quadrangular cartilage the latter often becomes deformed. At times it thickens on both sides, at times bends and becomes hook-shaped, and frequently slips past the vomer, or, in other words, becomes dislocated. At times the alæ of the vomer flatten out and the cartilage unites directly with the vomer, in which case ridges usually develop on one or both sides of the septum, being formed, as Krieg asserts, by the squeezing outward of the cartilaginous strip in the vomer groove.

On the lower part of the septum may usually be found on each side a membranous cul-de-sac, 2-9 mm. in length, called Jacobson's organ. These lie on the quadrangular cartilage just above the anterior nasal spine, in front of the anterior dental canals, 22 mm. from the naso-labial junction, and 8 mm. from the floor of the nose. The openings of these accessory organs of olfaction, 1 to 1½ mm. in diameter, are directed forward, and cases are on record where the openings have been probed during life. In certain of the mammalia they are supplied with olfactory epithelium and filaments of the olfactory nerve, and in these animals the organ is enclosed in a firm capsule, Huschke's cartilage. In the human embryo, Kölliker was able to demonstrate Jacobson's organ, even if only rudimentary, in every case he examined. In one case, however, he found it present in a child of eight weeks, in whom it was well developed and supplied with an olfactory filament. Although Huschke's cartilage is also present between the crest of the superior maxillæ and the vomer, it remains rudimentary in man or is reduced to a cartilaginous ridge running in the direction of the upper edge of the vomer. Indeed, Zuckerkandl discovered certain cartilaginous growths in this region, completely surrounded by perichondrium, proving that they were not the spurs and ridges so commonly located here on the septum, but separate cartilages, and more than likely Huschke's cartilages, here, however, termed the vomer cartilages.

Embryonic Development.—In the embryo, we notice at the beginning of the second month, as the first step in the formation of the nose, a slight groove appearing at either side of the frontal protuberance. Two projections, nasal processes, now develop on

each side, the external pair forming the outer walls of the nose the internal developing into the septum :



Embryo at one month, partly diagrammatic.

The mandibular, or first pharyngeal, arch divides into two parts, the superior uniting with that of the opposite side to form the upper jaw, while the lower jaw is formed by the union of the inferior maxillary portions. The nasal processes, slightly diverging, grow downward, and finally reach the floor of the nose, which is now, at the tenth week, formed by the union of the two superior portions of the mandibular arch. The fact of the septum in the embryo being formed of two parts is found to exert an influence throughout, though the internal processes now coalesce. Thus, according to Rambaud and Renault, at the end of the second month of intra-uterine life, ossification begins on *both* sides of the septum, which up to this time consisted entirely of cartilage. In the third month these ossification centres unite to form the vomer, but the tendency to remain separate still persists, for at each edge, except the posterior, there are deep grooves left where the two plates do not unite. Into these grooves fit the perpendicular plate of the ethmoid bone anteriorly, the rostrum of the sphenoid bone above and the nasal crests of the superior maxillary and the palate bones below. Thus the vomer is locked securely in its place by the surrounding bones, except anteriorly, and, consequently, it is here that curvatures of this bone are usually found.

The perpendicular plate of the ethmoid bone does not begin to ossify until the sixth month of infancy, the ossification, starting from

the body of the ethmoid, reaches the vomer in the third year, and the process is completed about the sixth year. This fact, Zuckerkandl states, explains why marked deformities of the septum so rarely appear before the seventh year; but it should be remembered that deviations and spurs may be found in very early childhood. I have seen these deformities of the septum in the new born, and Mihal-kovics claims to have found them at the third fetal month.

When the ossification of the perpendicular plate reaches the vomer the process usually ceases, leaving a strip of the primitive cartilaginous septum in the groove between the plates or alæ of the vomer. This strip of cartilage, which often persists in late adult life, frequently extends from the quadrangular cartilage to the rostrum of the sphenoid bone, and, as it is simply a prolongation of this cartilage, it is named the speno-ethmoid cartilage, or spenoidal process of the septal cartilage. The above-mentioned sulcus, or groove, was found by Zuckerkandl in 62 per cent of adults, although at times only as a trace, and he states that as long as it persists, spurs and ridges are not so apt to develop. The sulcus is in reality a canal formed by the growth of the wings or alæ of the vomer. It is, however, not a perfect canal, but fenestrated here and there, on one or both sides, and this probably influences the size, shape and position of spurs and ridges.

According to Disse, in the ninth month of embryonic life the hard palate lies above the level of the Eustachian tube mouths; at birth it is on the same plane, while later it lies considerably below. *This is due to the downward growth of the hard palate.* Thus it appears likely that the elevation of the hard palate, so often seen in adult life, is a lack of development, and is, therefore, an embryonic type. I wish to emphasize this point, and for this reason shall refer to it later. This descent of the hard palate is made still more evident by recalling that the choanæ in the infant are almost round, while in the adult their perpendicular axes are twice the length of the horizontal. This high position of the hard palate in infancy is of practical interest to us, for the inferior meatus is thus nearly obliterated, and the respiratory function is carried on chiefly through the upper part of the nose. With such a restriction of breathing space, it is no wonder that a simple cold in the head is of such importance in the young child, and is especially dangerous in the case of a nursing infant.

The ossification of the perpendicular plate of the ethmoid bone does not always progress to the same extent anteriorly. Zuckerkandl states that in about 49 per cent of the cases it reaches only to

the middle of the bridge of the nose; in 38 per cent to the lower third; in 10 per cent it reaches only to the upper one-third of the nasal bridge, and in 3 per cent it supports only the nasal spine. Now and then cases will be found where the perpendicular plate projects far outside of the pyriform aperture, or, on the other hand, it may not reach even to the top of the nasal spine. A striking example of each of these varieties may be seen in the collection of skulls in the Mütter Museum at the College of Physicians. Thus in many cases the bridge below the nasal bones rests upon cartilage only, an important point to remember in explaining the cause of certain deformities of the septum. In such cases even a slight blow on the nose, insufficient to break the nasal bones, may readily damage the cartilage, producing either a complete fracture, a green stick fracture, or a hematoma, which may lead to abscess and destruction of the cartilage.

In the infant the bridge is low and undeveloped, and the openings are on a plane with the face, the apex being tipped upward. As the septum develops, the bridge is elevated and the openings are directed downward; for this reason an arrest of development of the perpendicular plate of the ethmoid bone would give rise to the deformity known as pug nose.

Diseases of the Septum.—Of the many pathological conditions of the septum, the following are the most important:

1. Deformity, which we may subdivide into
 - a. Deviations,
 - b. Dislocations,
 - c. Ridges and spurs.
2. Hypertrophy,
 - a. Of the tubercles,
 - b. Of the septal folds,
 - c. Of the mucous membrane in general.
3. Atrophy, leading to deformity of the external nose.
4. Hematoma, followed by
 - a. Abscess, which may lead to
 - b. Perforation.
5. Ulceration, leading to
 - a. Perforation, and often to
 - b. Synechia.
6. Vascular dilatation.
7. Synechia.
8. Lupus, Tuberculosis and Syphilis.
9. Tumors.
10. Anomalies.

1. Before taking up the deformities of the septum, I wish to lay particular stress on the fact that, according to Broca, with the exception of the ears, there is no part of the body which exhibits more strongly the influence of heredity than the nose, and it is interesting to note that these characteristics do not make themselves evident until the time of puberty.

Deformities of the septum are due either to maldevelopment, traumatism, or disease, and this is probably the order of the frequency of the causes.

a. Deviations of the Septum.—According to Zuckerkandl, after the seventh year 60 per cent of all cases examined by him had deviated septa. Mackenzie, in over 2,000 skulls, found the bony septum deviated in about 77 per cent, and suggested that the cartilaginous portion also had probably been deviated in many of the cases where he found the *bony* septum straight. While deviations are most commonly confined to the anterior two-thirds of the septum, Jurasz and Stier found the posterior third deflected forty times in 300 cases examined by them post-mortem. In 1,657 skulls, in which Mackenzie found deviations of the bony septum, it was deflected to the left in 838, to the right in 609, S-shaped in 205, and irregular in 5. Note that Mackenzie found the septum more frequently deviated towards the left, while other observers, mostly clinicians, find deviations towards the right by far the more common. We must not forget, however, in looking at this apparent discrepancy, that when the bony septum is bent to one side anteriorly the cartilage is usually deviated in the opposite direction. Of 1,061 cases of which we have records regarding this point at the Polyclinic Dispensary, the cartilaginous septum was deviated to the right in 427, to the left in 197, S-shaped in 44, irregular in 45, thickened in 182, fairly straight in 40, and had a spur or ridge alone in 126. While it would, at first glance, seem that we should place more reliance on the statistics given by Mackenzie, because in our examinations during life we cannot so well appreciate the true anatomical deformities of the septum, especially so on account of the frequency with which the concavities are filled up with thickened mucous membrane; on the other hand, in considering his results, we must not forget that the cartilaginous septum is usually distorted or destroyed, and the bony septum warped or altered in shape in the dried skull.

Etiology.—It is unlikely that the external influences, such as using the right hand in blowing the nose (Beclard), the habit of sleeping on one side (Welcher), or of perpetually boring with the finger in one side of the nose (Colquet), have anything to do with the develop-

ment of deviations of the septum. Many deformities are due to inherited tendencies, and begin, therefore, in embryonic life, and this, I think, accounts for those deviations, ridges, etc., which are discovered in the embryo or the infant.

In weighing the importance of trauma in causing deformities of the septum it should be remembered that the nose, being the most prominent feature of the face, is more exposed to injury. Thus it follows that man, by reason of his more active life, would be more apt to have traumatic deviations and deformities than woman. Jurasz has given us data on this point, for in a group of 193 cases of deformed septa, probably due to injuries, 132 were in the male.

Except in the instances where deformities of the septum are caused by traumatism or disease, we must look upon them for the most part as the result of evolutionary, or, perhaps, more properly speaking, of devolutionary changes. The external nose of certain peoples, the African negro, Egyptian, American Indian, and others, is more or less characteristic, and is the result of centuries of exclusiveness, which thus preserves the purity of the races. The high or leptorhinc nose of the dolichocephalic head needs a greater development of the septum than the low nose in the brachycephalic type; consequently, in the intermarriage of different races, should the nose tend to follow the leptorhinc character, say, of the father, while the rest of the facial bones follow the platyrhinc type of the mother, there must necessarily be a bending of the septum, locked, as it is, in a frame already ossified. Broca, who has given special attention to the ethnological study of the nose, finds that when one race has conquered another, the nose, as generations go by, begins to follow the type of that of the more numerous race. It is curious to note that the prominent nose of the Roman was almost always deviated while that of the American Indian is almost always straight. May we not, however, argue that the Roman nation was a fast degenerating race, and that there was already a great admixture of foreign elements. In this country, and, in fact, in all civilized lands, the mingling of the races is very great, and this is undoubtedly one of the principal causes for the prevalence of septal deformities. I do not mean to assert that this is the only, or even the most common cause, or that the nose is perfect in form in the pure races, for injury, disease, etc., as before mentioned, play a prominent rôle in the production of both external and internal deformities.

The chief cause of deviations, and probably of many other deformities of the septum, is, I believe, *the lack of development of the hard palate*. Trendelenburg was, perhaps, the first to associate the

high-arched palate with deformity of the septum, but did not, so far as I can learn, consider it due to a lack of development of the maxillary bones. Loewy expresses somewhat the same idea, but regards the Gothic, or high-arched palate, as of rachitic origin. Zuckerkandl rather scouts this idea of Loewy, and says that he has been unable to associate rickets with deviated septa, and that it is chiefly the lower jaw, not the upper, which exhibits the rachitic influence. On the other hand, it is in the every-day experience of us all to find the high-arched palate associated with a deviated or otherwise deformed septum. Thus in 302 cases of high-arched palate I examined lately, there were twelve only where there was no marked deformity of the septum. Here, then, we have 96 per cent of deformed septa, which shows that there is undoubtedly a very close relationship between the high arch and septal deformities. One must not, however, in drawing conclusions as to the relationship between the Gothic-arched palate and deformities of the septum, consider that every high arch is an abnormal one. In studying the skulls in the Mütter collection, I found that a perfectly straight septum was not uncommonly associated with a high arch. This, however, was chiefly in dolichocephalic heads in which, with the high, narrow skull, there was associated a high, hard palate, and, in spite of the latter's position, the choanæ were also very high and narrow. I would add, however, that the skulls were those of non-Europeans, in whom, as Zuckerkandl has pointed out, one finds deformities of the septum much more infrequent than with us. As we have seen above, the infant hard palate is of the Gothic type, and anything which interferes with the full and perfect development of the child prevents also the development of the hard palate and consequently its descent. Indeed, as years go by, the Gothic arch becomes more and more peaked by the further development of the alveolar processes and the eruption of the teeth. On account of the high position of the palate, the septum must bend or twist, accommodating itself to the boundaries imposed by the unyielding framework of the bones with which it articulates. Another point in favor of this view is that mentioned by Welker, that in some cases there is a descent of one of the superior maxillary bones, the other remaining high-arched, in which case the convexity of the deviation is toward the lower.

This, therefore, is the explanation I would advance as to the manner in which certain, and probably a very large proportion, of the deformed septums are produced, and it leads us naturally to the question of the association of the Gothic-arched palate with adenoids.

It has always seemed to me absurd to say that, in cases of adenoids, the high-arched palate is caused by "increased atmospheric pressure on the roof of the mouth permitted by mouth-breathing;" or that, as another writer asserts, "the upper lip and cheeks falling heavily against the sides of the upper jaw, and pressing these parts together, narrows the jaws and forms the high Gothic-arched palate." Adenoids are one of the commonest and most manifest causes of lack of development in a child, and, occurring usually at a time when the hard palate should descend, interfere with this and almost invariably lead to deformity of the septum. We should not neglect to mention another form of deviation caused, as Zuckerkandl asserts, by the outgrowth of a large, sharp ridge on one side of the septum. The deviation is of quite common occurrence and is angular in shape, the concavity following the direction of the ridge.

Varieties.—The varieties of deformities of the septum are indeed endless. In addition to the simple scoliosis, in any direction from horizontal to perpendicular, and of double scoliosis, or S-shaped deviations of all degrees, many deformed septa are found to which it is impossible to give any more definite description than to say that they are irregular.

b. Dislocations.—Complete or partial dislocations of the quadrangular cartilage and of the perpendicular plate of the ethmoid bone are not uncommon, but they are more often found associated with fractures and deviations than occurring independently. At times the dislocated portion, after slipping from its articulation, continues to grow into one fossa, forming a characteristic ridge, while the edge of the vomer, or more likely the spheno-ethmoid cartilage, unopposed by the ethmoid plate or the quadrangular cartilage, develops a ridge on the opposite side. In certain cases the dislocations as mentioned above seem frequently to be due to an extensive deviation of the upper septal section, where the over-development is so great that the plates slip by each other instead of simply bending upon themselves as more commonly observed. Dislocations or even deviations of the quadrangular cartilage may be followed by a depression of the bridge below the nasal bones, the upper lateral cartilages being without their normal support.

Not infrequently we come across dislocations of the columnar cartilage, a small cartilage found between the columna and the membranous portion of the septum. Such dislocation may be brought about by a deviation of the quadrangular cartilage in which the tip of the nose does not follow the general direction of the internal deformity. The cartilage projects somewhat outside the nostril

and being covered by its muco-cutaneous covering, on which ramify dilated blood vessels, it is very disfiguring. The condition, however, amounts to little, as the pieces can readily be excised and the edge of the wound united by suture.

c. Ridges and Spurs.—According to Zuckerkandl, ridges and spurs are found in thirty-five per cent of Europeans, but only in fifteen per cent among the pure races. "These do not develop so long as the vomer possesses a well formed sulcus between its alæ. When, however, the ossification of the perpendicular plate of the ethmoid bone has so far progressed that the vomer sulcus disappears, its further development causes outgrowth at the articulations." It is interesting to note here that this obliteration occurs in about one-third of all cases under seven years of age, probably one of the chief causes for the development of spurs and ridges in early childhood. According as the spheno-ethmoid cartilage develops on one side or the other, ridges are formed on the corresponding side of the septum, probably influenced by the position and size of the fenestræ in the canal of which we spoke, and through which the outgrowth probably takes place. Spurs are developed in the same way, by excessive development of the cartilage at a circumscribed place, as through a smaller opening, and, as the vomer alæ and the edge of the perpendicular plate of the ethmoid are pushed out at the affected spot, the spur is enclosed in a bony capsule. These parts may persist as distinct layers, or the spur, becoming bony, may unite with the vomer and the ethmoid plates covering it, and thus form a solid bony spur.

The ridges produced by fractures or other injury may usually be distinguished by their position, from those formed by maldevelopment the latter being always associated with the articulations. The generally accepted idea that the majority of ridges, etc., are produced by fracture, has been shown by Zuckerkandl to be founded on insufficient data. In this particular he notes that but little callus is thrown out around the fractured portions, and that whatever deformity exists is produced by the actual displacement of the fragments themselves.

2. *Hypertrophy.*—The most important hypertrophies of the septum, those of the tubercle and of the septal folds, have already been mentioned. There is, however, another condition, that of hypertrophy of the mucous membrane on various portions of the septum, of which a few words should be said. This frequently occurs as a thickening of the mucous membrane in the concavities of deviations, filling them up so that there seems to be merely a thickening of the

septum instead of a deformity of the underlying hard parts. Again there may be a general hypertrophy of the mucous membrane over a considerable portion of the septum, a condition difficult in life to distinguish from the deformity described by Kyle as a splitting of the cartilage, which is now, however, recognized as a failure of the cartilaginous plates to unite.

3. *Atrophy*.—Deviation of the septum, though not strictly speaking a cause of atrophic rhinitis, in some particulars bears a very close relation to it. Thus we find this disease further advanced on the more roomy side of the nose, and this roominess is partly due to deviation of the septum. It is of interest to note that the correction of such a deviation seems to have a decidedly favorable effect in hindering the advance of the disease. In atrophy of the septum the microscopic examination has shown that not only is the mucous membrane degenerated and the glands destroyed, but there is also, in advanced cases, a degeneration of the cartilage itself, with such a shrinking that the bridge of the nose is flattened. This produces the characteristic appearance of the face familiar to us all in this disease.

4. *Hematoma*.—Hematoma, or blood cyst of the septum, must be looked upon as the beginning of an abscess, as that is its usual termination. We may have as a variety of this a collection of serum instead of blood in the cyst, but its termination is usually the same. Although hematomata are most frequently caused by traumatism, idiopathic cases are reported. Abscesses of the septum have also been found to arise as a result of typhoid fever, erysipelas, etc., but these probably started as abscesses and not as hematomata. The hematoma consists of a collection of blood, as a rule between the perichondrium and the quadrangular cartilage, or between the cartilaginous plates which are united by diplotic structure. Either as a result of fracture of the cartilage, permitting a communication between the two sides of the nose, or because of the rapid breaking down of the cartilage, there is formed a similar collection of blood or pus beneath the membrane in the opposite fossa. Of the six cases of which we have full records in the Dispensary of the Polyclinic, two were in the first stage (hematoma), the third was a simple collection of serum, while the others were fully formed abscesses. In all there was free communication between the collections on both sides of the septum, readily proven by the ease with which they were evacuated through an incision on one side, for in no case was it necessary to incise the cartilage. It is, therefore, most improbable that the collections could have formed between the cartilaginous plates, asserted by Heymann and others to be the usual course; cer-

tainly not in the first three cases, for necrosis of the cartilage could hardly have taken place so early. We have already seen that a light blow on the tip of the nose may readily break the septal cartilage and, should this not be sufficient to break the lining membrane, the blood from the broken vessels would naturally collect beneath the perichondrium, and be distributed through the crack in the cartilage, thus forming nearly symmetrical swellings on both sides of the septum. The blood, if infected, forms an abscess which may result in more or less destruction of the cartilage, and, unless it is early evacuated, falling in of the tip of the nose may readily occur. It is important to remember that even though considerable destruction of the cartilage results, it may be regenerated unless perforation or disorganization of the perichondrium occurs. In one case lately seen in private practice, such widespread necrosis had occurred before the patient came under treatment, that but little cartilage could be felt by probing through the wide incision. At the end of one month the cartilage had completely regenerated, and, it is of great interest to note, a marked deviation occurred in spite of all effort to prevent it.

5. *Ulcerations.*—While these are very common, and almost always of traumatic origin, a few occur as the result of typhoid and other fevers, and of tuberculosis and syphilis. Beginning as an excoriation of the mucous membrane covering the cartilage just within the inner naris, the process may invade the deeper-lying structures until the cartilage, deprived of its nourishing membrane, necroses, and the soft parts on the opposite side are attacked and destroyed. Ulcer of the septum may progress, therefore, until a perforation between the two fossæ is formed, and the destructive process may invade more and more of the separating wall, until the support of the nose is weakened and the bridge becomes depressed. The great majority of ulcerations of the septum are started by the irritation produced by picking at the nose. The tendency which dust, etc., has to collect in the vestibules, and the discomfort occasioned by its presence, seems to call for its forcible removal; and thus it frequently happens that the membrane of the septum is injured, and once injured, crusts form which it requires still greater force to remove. This is probably the chief reason, then, for the ulcer arising at this point on the septal cartilage, a point just within reach of the finger tip, and the explanation of its seemingly progressive nature. At times we meet with cases where, though the cartilage has been perforated, the soft parts on the opposite side have resisted, the destructive process has ceased, and the wound becomes cicatrized.

Again, we have met with cases where only a superficial layer of cartilage has necrosed and peeled off, the wound healing and leaving the cartilage simply weakened but not perforated.

The simple ulcer of the septum readily heals when the cause of irritation is removed, unless the deeper structures are involved, when perforation readily, indeed, almost unavoidably, occurs.

It has been asserted by several writers that congenital perforations occur in a small percentage of cases, and that they are to be looked upon as the result of a lack of development. From a study of the embryological growth of the septum, it is easy to see that such an opening may be produced by an arrest of development, the front portion of the septum being developed from the frontal protuberance, the posterior portion from the superior maxillary process; but, as the cases of reported congenital perforations were discovered only in after years, the diagnosis rested merely on theory with, I think, no good reason to back it.

6. *Vascular Dilation*.—This is one of the most frequent conditions with which we have to deal clinically. Giving rise, as it does, to recurrent attacks of epistaxis, which range from a slight trace of blood, on blowing the nose forcibly, to grave hemorrhages so frequently repeated as to threaten life, patients often come to us from this symptom alone. Occurring on one or both sides of the septum, the blood may flow forward through the external nares or pass back into the rhino-pharynx, and thence into the stomach and bowels, or into the larynx and trachea. In the latter case, the patients may be greatly alarmed, for not infrequently a cough exists at the same time, or accompanies the hemorrhage, and they regard the bloody sputum as an evidence of pulmonary trouble. The determination of the point of bleeding, and the cause of the condition, is not always easy. In the majority of cases the epistaxis arises from dilated vessels on the quadrangular cartilage just within the naris, and this region should first be examined. If the patient comes while the bleeding is still going on, or shortly after it has stopped, we can usually determine its source by wiping away the blood and watching to see the general direction from which it flows, or by slowly removing the coagulum and noticing the point from which the bleeding starts afresh. In some cases it may be necessary to rub the surface briskly with a cotton-armed probe, endeavoring to set up a renewed bleeding in order to discover the ruptured vessel. Epistaxis may be due, on the one hand, to such conditions as plethora, anemia or vicarious menstruation; or, on the other, to cardiac, hepatic or renal trouble; but its most common cause,

is, as has been said, the rupture of dilated vessels on the lower part of the quadrangular cartilage. The excoriations so common in this location lead to dilation of the surrounding vessels, and exertion or trauma, as from picking or forcibly blowing the nose, readily occasion the epistaxis.

7. *Synechia*.—The occurrence of synechia uniting the septum to one or more of the turbinals is not uncommon. We will pass over the various forms of occlusion of the nasal passages, such as the more or less complete atresia of the choanæ, which are occasionally bony, and then always congenital, and will direct attention simply to the band-like bridges stretching across the fossæ. In almost all cases they are the result of adhesive inflammation, but a few, and these bony, are due to congenital maldevelopment, associated as they are with asymmetry of the skull. To the twelve cases reported a few years ago, I could add a dozen or score more which I have personally studied. While many have been reported by other writers, Zuckerkandl described twenty-six, which he discovered post-mortem. In Zuckerkandl's cases, the synechiæ were mostly in the upper regions of the nose, and, therefore, not easily seen in a clinical examination. The reason for the frequency of the occurrence of such union here may be readily understood by recalling how close together the membranous surfaces above the middle meatus are normally. Those that I have found have been mostly in the lower half of the nose, though some have occurred between the middle turbinal and the septum. A few seem to have formed as the result of a long-continued pressure of a septal spur or ridge against the opposite turbinal, but the majority were evidently occasioned by the adhesion of excoriated surfaces following membranous rhinitis, operations on the septum, or cauterization of the turbinals. In several cases I have found them occurring as the result of syphilitic ulcerations. In all these cases, however, the method of their formation was the same, *i. e.*, a union taking place between two adjacent surfaces which have been denuded of the epithelial layers either through traumatism or severe inflammation. The size of these synechiæ varies from a thread-like band to a thick fleshy union, extending almost the entire length of the turbinal. In a case lately seen it was necessary to pass a catheter through the superior meatus as a guide, and saw through the adhesion, which extended almost the whole length of the middle turbinal.

8. *Lupus, Tuberculosis and Syphilis*.—While lupus and tuberculosis of the septum are rare conditions, it is well to bear the

possibility of their occurrence in mind. The former at times leads to perforation of the septum, and also to great destruction and sinking in of the external nose. The latter may also occur as an ulceration, but it is almost always secondary to a general tuberculosis. The course of the first two diseases is but little influenced by treatment, which is an important point in distinguishing them from syphilitic affections. Syphilis is a much more common disease of the nose, and, as a rule, invades the septum in the form of a gumma. The bony plates are usually the first points to be attacked, but the process spreads in all directions and readily involves the cartilages as well. This tendency of syphilis to invade the bony portion of the septum gives us one of the most important points in distinguishing the perforations caused by this disease from those mentioned under simple ulcerations of the septum. Cases of syphilis of the septum, as a rule, seek assistance only after considerable destruction has taken place, and then because of the difficulty in breathing occasioned by the gummatous swelling, or because of the later-appearing discharge of frightfully offensive pus from the necrosing bone. While the progress of this disease is, in the majority of cases, readily influenced by medicine, if it has proceeded to a point where the bone is extensively necrosed, surgical treatment must be employed to aid in the separation of the sequestrum. The destructive process is now and then so extensive that practically the whole of the septum is destroyed, and yet it may happen that the external nose does not sink in. I have seen two such cases, and in one the whole vomer was cast off, and had to be divided with a snare in order to remove it without injury to the nostrils.

9. *Tumors of the Septum.*—While rather a rare condition, over a hundred tumors of the septum have so far been reported in rhinological literature. Among these polyps, tubercular tumors, and sarcomata are, in the order given, the most frequent.

10. *Anomalies.*—Among the various forms of lack of development, we find reported cases of double septum, in which the septal processes have failed to unite, of entire absence of the septum, or of non-cartilaginous or fibrous septum. On the other hand, as an example of hyper-development, we have an overgrowth of the septum forward, elevating the external nose and giving rise to the prominent hump or hawknose, or of prolongation of the septum backward to the base of the skull; in the latter case the rhinopharynx being divided into two cavities.

THE NOSE AND THROAT IN THE HISTORY OF MEDICINE.

BY JONATHAN WRIGHT, M.D., BROOKLYN, N. Y.

(Continued from page 196.)

THE GREEK WRITERS OF THE EASTERN EMPIRE.

And now begins that long and dreadful epoch in the history of mankind when civilization was almost overwhelmed in the slowly crumbling ruins of the Roman Empire. Julius and Augustus Cæsar, in extinguishing the anarchy of the last days of the Republic, extinguished with it much of that burning fire, the love of human liberty, which has always blazed high in lighting the progress of civilization. Tiberius, Caligula, Claudius, Nero, Domitian, spilled the best blood of patrician Rome and demonstrated the horrible evils of a despotism under weak and wicked men. Nerva, Trajan, Hadrian, the Antonines demonstrated the enormous but temporary advantages to mankind of a despotism under virtuous and capable rulers, but by the time they had passed away, the virtue, the sense of responsibility, the power of initiative, had long since perished. Anarchy and ruin began to spread over the world, and the powers of darkness, oriental sorcery, the incantations of ignorant priests, the vulgar fanaticism of a nascent religion with all its superstitious dross, unrefined and unrestrained, held high carnival in the temples of science and the advance in the art of medicine ceased, and for many hundreds of years the best we can say of medical writers, such as Oribasius, Ætius and Paulus Ægineta is that they copied with tolerable accuracy from the writings of others, intruded few of their own ideas and the admission to their pages of incantations, the descriptions of amulets and cabalistic figures, the recommendations of Chaldean drugs are no more than the perusal of the history of their times should lead us to expect. Attempts were made to check this tendency towards magical therapy. Thus Serenus Sammonicus,* Sorcery. the elder, was put to death by the orders of the savage Caracalla (211 A. D.) because he recommended amulets as remedies for intermittent fever (Sprengel). He or his son wrote a medical poem (Edit. Ackermann) in which, among numberless other remedies, he

* Serenus Sammonicus was a firm believer in the magical efficacy of the triangular arrangement of the word *Abacadabra* written on a piece of paper folded into the form of a cross, tied up in a piece of linen cloth and placed over the pit of the stomach, to be worn nine days, and then before sunrise cast over the shoulder into running water.

advised the application externally by friction of bull's grease or bear's grease to the neck in cases of sore throat, besides the popular prescription of vinegar as a gargle. Such remedies are still popular ones on every country hill side.

Constanti-
nople.

Constantine founded his great city at Byzantium and moved thither the capitol of the world* (330 A. D.). Julian the Apostate, his grandson, in his attempt to revive the old pagan religion engaged also in the more laudable endeavor to resuscitate the learning of the ancients. Oribasius accompanied him in his campaigns in Gaul before his accession (361 A. D.) to the throne of Constantine, and to him was delegated the task of collecting and epitomizing the works of former masters in the art of medicine. The works of Galen are the chief sources from which he made his compilation, but unfortunately, unlike Cælius Aurelianus and Paulus Ægineta and indeed Galen himself, Oribasius only reveals to us knowledge of the diseases of the upper air passages which is accessible to us at its source. There is scarcely a passage of any importance concerning the nose and throat which we have not already noted in the works from which this author drew his information.

It was in vain that Julian in his short reign attempted to revive ancient learning. Succeeding rulers of a grovelling despotism, although themselves occasionally enlightened and virtuous, were unable to bring back the old free spirit which produced the age of Pericles and the era of Augustus. I may again quote the remarks of the sententious Gibbon: "The subjects who had resigned their wills to the absolute commands of a master, were equally incapable of guarding their lives and fortunes against the assaults of the barbarians, or of defending their reason from the terrors of superstition." The Roman world was divided at its line of natural cleavage between the oriental and the occidental races of mankind. The Eastern Empire lived many centuries at Constantinople in the reflection of the light of the old world of Galen and Hippocrates, but it was around the western shores of the Mediterranean, as formerly along the coasts of the Aegean, that civilization was, after many hundred years, again to assume a new life and a new vigor. On the death of Theodosius (395 A. D.), the last great Roman emperor, the mighty fabric fell apart forever, and under Honorius and his equally impotent successors, after the death (408 A. D.) of Stilicho, the

* Christianity began in Gaul in the middle of the second century, in the time of Galen, Lyons having the first church, and so rapid was the spread of the new faith that two hundred years later Constantine the Great found it to his interest to embrace the forms of Christianity as his ostensible faith and to free the church from taxation.

great commander, the Western Empire was deluged by the hordes of Goths and Visigoths, by the Huns and Vandals, and anything like medical learning utterly perished with the other arts from that part of the face of the earth. The barbarians were converted to Christianity, and their monks, in the search for means of saving their souls from eternal torment, found it necessary to study the Holy Scriptures. Their rude chieftains in their search for methods of legal procedure and orderly administration, found it necessary to study the codes of Roman law. These circumstances finally brought about their familiarity with Latin and Greek literature. Virgil, Cicero, Livy, contributed to the amelioration of their manners and the expansion of their intellects, while Galen, Pliny, and Celsus eventually transmitted to them the seeds of medical science, which had matured in the old civilization, and had been almost lost in its annihilation. Cassius Felix was a medical writer who is supposed to have lived in the fifth century. His book,* as he confessed, was mostly made up of extracts from the earlier Greek writers. He thus speaks of what is apparently diphtheria.

"Ulceration of the fauces, if accompanied by acute fever in sickness, is found to be very bad and fatal, especially if it has begun with severity. There is moreover another inflammation besides the acute fever, which forms in the deep recesses of the mouth white or black, or rather dusky gray patches, which they call tephros (ash colored). It is usually called by the Greeks, Aphtha, which we call 'coction' of the mouth. And it is worse, even deadly, in young nursing infants on account of the tender age."

There is no mistaking this blending of apthous sore mouth with true diphtheria.

The Eastern Empire preserved the vestiges of Greek learning, all but suffocated by the sorcery and witchcraft which apparently have always found such a fertile soil beyond the Hellespont. Nemesius, a bishop of Emesa in Syria, lived during the reign of Theodosius (376-395 A. D.) and wrote a book on the "Nature of Man," in which the old critics, envious of the fame of Harvey, used to pretend to find the discovery of the circulation of the blood. In this book there is a chapter on the respiration, and in it we find the author describing the larynx under the name of the bronchus, and following Galen in saying it is made up of three cartilages. It is Marcellus, very aptly called "Empiricus," however, who best illustrates the condition of medical learning at this time. He was a Gaul, born at

The Eastern
Empire.

* Cassii Felicis De Medicina (Edit. Val. Rose).

Bordeaux, and though a high officer of Theodosius and his son Arcadius, exhibits, as Sprengel remarks, the soul of a slave in his works, recommending certain remedies because they were used by the Diva Augusta or the Diva Livia. His work "De Medicamentis" is said to have been much mutilated by later editors. Chapter X deals with the diseases of the nose, coryza, polypus, *ozæna*, nose bleed, or rather with their treatment; for few writers after Galen devote much space to anything but the transcription of multitudinous formulæ. We will not pretend to mention the innumerable drugs, but we note that he recommends the prescription of Pliny that a man whose nose stinks should kiss the nostrils of a he-mule, and if the patient is a woman she should kiss the nostrils of a she-mule. Besides drugs which are orthodox now, all kinds of stercoraceous applications are recommended. When the nose is bleeding it is helpful to say three times in the ear of that side some unintelligible jargon. However much we may have to criticise in Marcellus, there is one axiom which he lays down which is not always found in preceding authors and is often disregarded by his successors. In his chapter on affections of the throat, he says: "For a swelling of the fauces and of the palate everything used in the prescription should have no irritating quality," but the very efficacious prescription which follows contains the juice of sour grapes—Sprengel surmises, because the Latin word *uva* means both grape and uvulitis; but we have seen that the juice of unripe fruits was a favorite prescription for this affection among both the Hindus and the early Greeks. This, however, is his incantation for pain in the throat, which he who suffers should sing to himself: "Crissi crasi, cancrasi—put the hand on the throat and repeat it three times." Besides the usual inevitable swallow prescription of the ancients we find also this remarkable modification of it. "This cure will help one suffering with chronic sore throat. You must shut up a live swallow in the cavity of an African shell and this being tied up in the linen cloth of Egypt, you shall hang it around the neck and on the ninth day you will be free of your trouble." And this is another elaboration of the swallow prescription apparently derived from Dioscorides: "But especially against Synanche it is useful if you will take young swallows alive in the nest, and will burn these alive so that a powder is made from them (their ashes) on the day of Jupiter in old moon, but look to it that you find unequal numbers* in the nest and that you burn as many as there

Incantations
and Amulets.

* Terna tibi haec primum triplici diversa colore
Licia circumdo, terque haec altaria circum
Effigiem duco; numero deus impari gaudet.

—Virgil Eclogæ VIII, 73-75.

"For there's luck in odd numbers, says Rory O'More."—Sam'l Lover.

are, and you will give this powder mixed up with warm water as a drink, and with the finger covered with the powder you will touch the place of the synanche from the inside. You will greatly admire this prescription." And then come some more incantations, long and involved. As an amulet some Greek jargon was to be written on a paper which was to be wrapped in linen and hung around the neck for a sore throat. Another mysterious formula was to be used in the same way for a bone in the throat. While I have not exhausted Marcellus' savory pharmacopœia in any of its branches it is understood, of course, that these selections are made from many others of a more rational nature which have not even the virtue of originality nor the interest which always attends the mysterious in therapeutics. Indeed, to do him justice, he only speaks of the incantations, as a rule, after mentioning many of the routine prescriptions which are found in the writings of an earlier and a happier age.

As we have seen there was an interval of two hundred years (660-460 B. C.) between the introduction of written records into Greece and the birth of Hippocrates. This doubtless included that period when the record was engraved on the column of the temple of Æsculapius at Epidaurus of a sacred dog curing a cervical tumor by licking it. From the birth of Hippocrates to that of Galen, six hundred glorious years of medical progress intervened. We have seen the high state of anatomical knowledge revealed in the works of Galen. From the death of Galen to the time of Marcellus approximately another two hundred years had elapsed. The holy dog of Epidaurus finds a mate in the live swallow of Marcellus. "Facilis descensus Averno." As illustrative of the times and as containing a matter of some interest to our subject, I again quote from a page of Gibbon (III, Cap. XXXVII). A war had been raging in Africa between the Arians who denied, and the Catholics who upheld, the Trinity. It resulted in the discomfiture of the latter (530 A. D.)*.

"A military count was dispatched from Carthage to Tipasa; he collected the Catholics in the Forum, and, in the presence of the whole province, deprived the guilty of their right hands and their tongues. But the holy confessors continued to speak without

* The motto of the Church later, "Ecclesia abhorret a sanguine," was hardly applicable to this period. Macchiavelli referring to these African religious troubles in his *Istorie Fiorentine*, says: "Vivendo adunque gli uomini intra tante persecuzioni portavano descritto negli occhi lo spavento dell' anime loro."

The men living then amidst such persecutions carried written in their eyes the terror of their souls.

tongues; and this miracle is attested by Victor, an African bishop, who published a history of the persecution two years after the event. 'If any one,' says Victor, 'should doubt of the truth, let him repair to Constantinople, and listen to the clear and perfect language of Restitutus, the sub-deacon, one of these glorious sufferers, who is now lodged in the palace of the Emperor Zeno, and is respected by the devout Empress.' At Constantinople we are astonished to find a cool, a learned, an unexceptionable witness, without interest, and without passion. Æneas of Gaza, a Platonic philosopher, has accurately described his own observations on these African sufferers; 'I saw them myself; I heard them speak; I diligently inquired by what means such an articulate voice could be formed without any organ of speech; I used my eyes to examine the report of my ears; I opened their mouth, and saw that the whole tongue had been completely torn away by the roots; an operation which physicians usually suppose to be mortal.'" The operations now done for the extirpation of the tongue have proven that the tongue is not the indispensable organ of speech, but what would Galen or Æneas say if they should now be shown that the larynx is not the indispensable "instrument of the voice?"

Actius.

Ætius is said to have lived as a medical officer of the court at Constantinople about the middle of the sixth century. He was an Asiatic of Amida in Mesopotamia. After Oribasius, he was perhaps the best of those who transcribed the works of Galen and the older writers. There is a great deal in his works (*The Tetrabiblion*) concerning the nose and the throat, but very little we have not met with elsewhere. Uvulotomy and tonsillotomy and the incision of a quinzey are the surgical operations described. He warns against the dangers of secondary hemorrhage in tonsillotomy and directs that only that part of the gland which projects shall be cut off. If even a small portion of the normal underlying tissue is removed there is danger of hemorrhage. He was familiar with diphtheria and with adhesions in the larynx resulting therefrom, or possibly he refers only to the acute stenosis. Alum, nutgalls, mercury, besides bryonia, and many other vegetable and mineral astringents and emollient drugs are recommended by him. He fully equalled Marcellus in stercoraceous pharmacology. Incantations are less numerous perhaps, but not by any means absent from his writings. He recommends the use of forceps in extracting bones and foreign bodies from the tonsils. When they were in the gullet, the patient swallowed a sponge with a string attached to it, by which it was then hauled up. For this trouble he

also advises the repeated swallowing of bread boluses. It is said the following is the first mention of the Savior in medical writings:* "Moreover for the removal of those things which are stuck in the tonsils, immediately take a seat in front of the patient and command him to harken to thee, and thou shalt say: 'Come out, bone' (if indeed it is a bone or a straw, or whatever it may be), 'in the same way as Jesus Christ raised Lazarus from the grave, and in the same manner as Jonah came from the whale.' Then seizing the patient by the throat, exclaim: 'Blasius, the martyr and servant of Christ, says come up or go down.'"

This must have been excellent treatment for globus hystericus among the faithful.

Shortly after Aetius, lived Alexander to whom the surname of Trallianus is given, he being one of the five talented sons of a citizen of Tralles. He was the brother of Metrodorus, the grammarian, and of that Anthemius who was the architect of the great church, now the mosque of St. Sophia in Constantinople, which was built (532 A. D.) by Justinian and his consort, the fair Theodora, the licentious Cyprian prostitute who disgraced even the stage of Constantinople before she sullied the much-stained purple of the Cæsars.† Although there are many instances of thaumaturgy in his works, Alexander Trallianus practiced at Rome with honor and profit, and was perhaps the most enlightened physician and the least tainted with superstition of any who had succeeded Galen, but while he has written chapters on the diseases of the nose and throat, there is nothing in them to especially arrest our attention. Of a very different character was Sextus Placitus Papiensis, who outstripped even Marcellus and Aetius in the use of the viscera of animals and equalled them in other departments of Chaldean pharmacology. (Vid. Edit. Ackermann.)

Theophilus, a colonel of the guard under Heraclius (610 A. D.) seems to have been one of the very few medical writers who, in copying‡ from the works of Galen and others, troubled themselves with transcribing any of the anatomy or physiology or semeiology, of which they were in such need. Even he is very inexact. The teleology so prominent in the work of Theophilus is by no means absent from that of his great predecessor, Galen, but the former wishes to explain every function in a manner tending to the glory

Olfactory
Nerves.

* Tetrab. II Sermo IV, Cap. L.

† Gibbon: "The Decline and Fall of the Roman Empire," Vol. IV, Cap. XL.

‡ "De Homin. Fabric.," Lib. III, Paris, 1555.

of God, and he remarks upon the use of the epiglottis in protecting the larynx, that if a crumb fall in it, owing to the lack of proper action on the part of the epiglottis, the patient is suffocated, which is a gross exaggeration of even Galen's remarks in the same vein. His ideas of the purposes of the Almighty in perforating the dura mater and the cribiform plate of the ethmoid would hardly be orthodox to-day, illustrating how dangerous are dogmatic statements outside of the domain of theology. The only advance over the ideas of Galen which I am able to note in Theophilus is the point to which several historians have drawn attention. He accepted the Galenic and Hippocratic idea of air inspired and excretions drained through the perforations in the cribiform plate. He also supposed that through the perforations go the odorous particles. It is perfectly evident that he recognized* "the first pair of nerves as starting from the anterior ventricles of the brain and going to the foramen of the nose on each side, on account of which the brain perceives odors," but as the presence of the nerve fibres in the perforations would be inconsistent with the idea of their patency, we must conclude that Theophilus knew nothing of the distribution of the olfactory twigs. As his was a text-book in the schools of the præ-Renaissance period, this interpretation would certainly have been recognized if justified by the text.

Neither the Pandects or legal reforms of Justinian, nor the virtuous reigns of Tiberius II and Maurice (578-610 A. D.), were of avail in arresting the degradation of the Empire of the East. Justinian abolished the philosophical school of Athens and the consulship of the old Roman regime, but they were long since become mere shadows which were brushed away without harm and without profit to the world. What barbarians had spared the suicidal fanaticism of the despicable Christian citizens of Constantinople, or their equally cowardly and incompetent rulers, destroyed. Even under the great Constantine, every manuscript that could be seized was forthwith destroyed if it contained anything of pagan learning.

Under Heraclius, whose victories shattered the resources not only of the hostile Persian Empire, but the already faltering forces

* See the 1555 Paris edition. The Greek text is so antiquated that I am compelled to judge from the Latin translation of the passage which occurs at page 67.

Theophilus was one of the medical writers whom it was necessary to study and to teach at the University of Paris when it took its rise in the thirteenth century. (Sprengel.) It may be surmised that this choice was due rather to the theology than the physiology of his works.

of his own (610-641), we note the last of the Greek physicians whose works it is worth while for us to review in our search for knowledge of the diseases of the nose and throat. We are indebted to Paulus Aegineta for much which he has borrowed from sources inaccessible to us in the original. It is frequently impossible for us to know how much was original with him.* At least, with the exception of Alexander Trallianus, he is almost the only one after Galen whose works prove their author capable of any originality of his own. Living in the seventh century, he was probably contemporaneous with Theophilus.

Paulus
Aegineta.

We still find aphthæ† in infants confused with the graver disorder of diphtheria. He says that the black variety of the ulcers is the most fatal.

As in many of the older writers there is in Aegineta a chapter (l. c. Sec. 19) on the exercise of the voice, not only for strengthening it but as a general exercise of the body. After mentioning the operations for nasal polypi‡ which we have noted in Celsus and Galen, he remarks: "After the operation, having sponged the parts carefully, we inject oxycrate of wine into the nose, and, if the fluid descend by the roof of the mouth to the pharynx, the operation will have been rightly done; but if it does not descend, it is clear that about the ethmoid bones, or the upper part of the nose, there are fleshy bodies which have not been reached with the polypus instruments." Then follows the description of a barbarous method which, it seems to me, Paulus must have derived from a faulty reading or a misunderstanding of the sponge method of Hippocrates. Certainly nothing of the kind can be found in the Hippocratic treatises, as Adams in his comments intimates, but we shall subsequently find the Arabians sedulously following this plan. They apparently derived much of their knowledge from Paulus. "Taking, then, a thread moderately thick, like a cord, and having tied knots upon it at the distance of two or three fingers breadths, we introduce it into the opening of a double-headed specillum (probe); and we push the other extremity of the

The Knotted
String for
Nasal Polypl.

* Dr. Francis Adams' Sydenham edition of the translated works of Paulus Aegineta, which I follow, contains the translator's comments on the different subjects treated, and these consist mainly of citations from all the ancient writers on medicine, including the Arabians. No better work can be consulted for a review of ancient medical knowledge, although rarely there seem to be grave errors, and the citations do not usually guide one to the quoted sources in the texts of the originals. Unfortunately the text of Paulus does not accompany the translation.

† Book I, Sec. 10.

‡ Book VI, Sec. 25.

specillum upwards to the ethmoid openings, passing it by the palate and mouth, and then drawing it by both hands, we saw away, as it were, with the knots the fleshy bodies. After the operation, we keep the opening separate by means of a tent resembling the wick of a lamp."

As for tonsils* he pulled them forward with a hook "and then we cut them out by the root with the scalpel suited to that hand, called *ancylotomus*, for there are two such instruments having opposite curvatures." He used a tongue depressor in this operation as well as in that of uvulotomy (l. c. sec. 31) but he adopts Galen's caution not to cut off too much for fear of injuring the voice and making the patient liable to inflammation of the lungs. If the patient refuses a cutting operation the rudundant portion may be removed by caustics applied by a special instrument, called "*stapylocaustos*."

In his comments upon the operation of Antyllus for tracheotomy which I have quoted, Paulus makes it plain that he himself was familiar with the operation, for he says (l. c. sec. 33): "We judge the windpipe has been opened from the air rushing through it with a whizzing noise and from the voice having been lost." In closing the wound he freshened the edges of the transverse incision and sewed the skin, but not the cartilage, the latter not being divided.

He follows Hippocrates in his treatment of fractures of the nose, (l. c. sec. 91). We miss all invocations, incantations and amulets from the throat pharmacopia of Ægineta, and he does not lay much emphasis on the Chaldean prescriptions, though they are mentioned with approval (III—27), stercoraceous drugs and the swallow prescription being advised.

THE ARABIANS.

In pursuance of the plan of this book we must now devote an unusual amount of space to the rapid enumeration of the political events which shifted the leadership in science and medicine from the Greeks to the Arabians, events which are connecting links in the progress of civilization.

Greek physicians existed at Constantinople as long as the Christian religion flourished there, but while their works are of interest to the student of the phenomena presented by a dying civilization, they are of less interest to the historian of the progress of medical knowledge. Guizot,† speaking of Roman Gaul in the last days of

* Book VI, Sec. 30.

† "Hist. de la Civilization en France."

the Empire, asserted that "The Library at Constantinople had a librarian and seven scribes constantly occupied, four for Greek and three for Latin; they copied the new works which appeared or the ancient ones which were degenerating. It is probable that the same institution existed at Trèves, and in the larger cities of Gaul." Notwithstanding periods of vigor exhibited by the Eastern Empire, notwithstanding, as Freeman declares, many of the Emperors were great conquerors and rulers who beat back their enemies on every side, and made conquests in their turn, although the last Constantine died a death worthy of the first, hopelessly battling for his empire in the breach of the city wall, notwithstanding all these things, learning did not send forth any new shoots, and Gibbon sums the matter up thus: "They read, they praised, they compiled, but their languid souls seemed alike incapable of thought and action." Finally, their political existence sank to the level of their civilization. The walls of Constantinople protected its feeble inhabitants, except for its conquest by the crusaders, for more than a thousand years after its impregnable situation had been selected and its defences constructed by the foresight and energy of the great Constantine. At last it fell (1453) before the conquering Turk, as falls every work of man, however wisely built or however stupendous, unless its bulwarks are the continued energy, virtue and intelligence of the people who enjoy its protection.

We have seen how, five hundred years before the Christian era, the great kings of Persia drew their physicians from the Greek schools of medicine. The Alexandrian dynasties had long since passed away, and it is significant to note to how low a level Greek medicine had sunk among the bastard descendants of that noble race to find another line of Persian kings sending Arabian physicians to Constantinople to minister to the many bodily ills of some of the Greek emperors; but it was first through Greek physicians, through the exiles whom the fanaticism of the theologians of Constantinople had driven into Persia, that the Arabs received the first inoculation of the virus of learning. It was through the exiles driven by anarchy and the forebodings of impending ruin, as well as by its culmination that Italy first received the direct impetus from Greek sources which resulted in the Renaissance. From the Nestorians the Arabians not only absorbed profane knowledge, but from them the youth Mohammed on his caravan trips drew the inspiration of his religion. Not only the Nestorians, but still more perhaps the Jews, who taught their religion to both Christ and Mohammed, aided in this transfer of learning to the Arabians.

The Arabian
Conquest.

Four years after the death of Justinian, Mahomet, the only son of Abdalla, was born at Mecca in 569 A. D. Heraclius, after his great victories over the Persians, was weighed down by age and disease, and his empire was exhausted by years of destructive warfare. Therefore the feeble races under the sway both of the Persian and of the Holy Roman Empire of the East were easy conquests for the sturdy Arab. The forces of nature are eternal, their laws immutable, and the results of their activity when surveyed over long periods of time and sufficient expanse of space, appear analogous even to the finite understanding of man. The expansion of the Mohametan Crescent rapidly grew until in a period of less than a century from the death of Mahomet in 632 A. D. one horn rested in the fertile valleys of Spain (710 A. D.) and the other menaced the walls of Constantinople itself. The fanaticism which is easily engendered in the populations of Asia has made it the cradle of religions. The poverty and hardships of the human beings who struggled among the burning sands of Arabia weeded out the weaklings of the race and trained the endurance of the survivors to resist the effects of thirst, hunger and fatigue, and when fired by the visions of Mahomet with the prospects of glory and power and with the hope of the indulgence of libidinous passions both in this world and the next, they swept away the feeble civil power, and with it the babbling theological dissensions of the Christians of Africa and Asia Minor, crossed the Mediterranean and overwhelmed the Goths who had had time to be enervated by the luxury of the fertile plains of Andalusia and Granada.

But from the northeastern confines of the temperate zone in Asia, the Turks, having previously accepted the religion and despised the civilization of the followers of the Prophet, checked the advance of his race. From the northwestern provinces of Europe the Germans and Franks, unsullied by a religion which inculcates the righteousness of polygamy and human slavery, checked the advance of the Saracens at the mountainous line which separates the Spanish peninsula from the rest of Europe. Charles Martel with his stout heart and iron mace annihilated their army before Tours in 732, and eventually they were driven back beyond the Pyrenees to develop a wonderful civilization and to suffer from its luxury and the enervation of the climate, which after nearly eight hundred years made them a prey to the powers of Ferdinand and Isabella (1493) grown to an effective force amidst the more arid and mountainous regions of Aragon and Castile.*

* The Arabs conquered Persia in the seventh, Spain in the eighth and the Punjab, in the ninth Century, and finally all India.

We have cause to be grateful not only that the victories of Mahomet produced empires which protected science and letters at Bagdad, Alexandria and Saragossa, but because they shattered the belief of large numbers of European mankind in the vain and presumptuous claims of the Christian ecclesiastics to a monopoly of the favor of heaven, and so perhaps did something to start the idea that the abodes of bliss are not exclusively a private park for the priests and their friends. At any rate they must have suggested the idea that images and relics were as little efficacious in ensuring victory as the gods of the pagans over whose destruction the early Christians gloated.

The destruction of the Alexandrian Libraries.

Julius Cæsar had first, by the incident of war, caused the burning of the Alexandrian library in the Museum. This was later replenished by Anthony in his devotion to Cleopatra, at the expense of the library at Pergamos. Four hundred years later Theophilus, the Bishop of Alexandria, destroyed also the library in the Serapion. His nephew, the saintly Cyril, followed him in the bishopric and added further laurels to the family fame by killing the fair Hypatia with a club. She was a learned pagan lady, addicted apparently to lecturing on theosophy. Finally the remnants of the books in Alexandria, which had survived the vicissitudes of a thousand years, were burned by the Arabians, when they were fresh from the barbarism of the desert, Omar sending word that what was not contained in the Koran was false and what was also to be found in the Koran was on that account superfluous. The great temple of the Serapion, the annex to the Museum, where science had flourished for centuries, with its splendid gardens of birds and beasts and its laboratories supplied with its instruments of precision, were destroyed by the fury, the folly and the fanaticism of man. It has been denied that the Arabians found anything to destroy. However that may be, these fiery fanatics, intent on entering the gates of Heaven, filled with objects of sensual delight, suddenly developed such a love for material science as the world had never seen before and perhaps has not been familiar with since. As Draper says, the Byzantines obliterated science in theology and the Saracens illuminated it in medicine. Vast libraries again were collected at Bagdad and elsewhere in Asia, Africa and Spain. The works of Ancient Greece were translated into Syriac by the Jews and the Nestorians, both of whom, the former for denying and the latter for modifying the Catholic acceptance of Christ, had been persecuted and expelled from the Byzantine and Roman dioceses. A good deal of Chaldean medicine was introduced by them to the Arabs who were at first apt

The Arabian Renaissance.

scholars in these matters. We have seen how its amulets and incantations and its filthy drugs abounded in the later Greek writers. With these things, however, astrology and the germs of alchemy were brought from the plains of Asia, and out of these, aided by the traditions, if not the records, of the school of Alexandria, the Arabs developed the great sciences of Astronomy and Chemistry. While they soon rejected with contempt the belief in incantations and amulets, they persisted in the use of stercoraceous drugs. Unfortunately for medicine they neglected the study of anatomy through the dissection of the human body. In this fact we recognize the influence of their religious scruples in preventing any material advance of rational medicine over the teachings of Galen and Hippocrates; for without this underlying study, medical science comes to a standstill and will ultimately perish entirely, however enlightened its votaries may be in other directions. Indeed, whatever may have been their contributions to other sciences, I confess, after reading something of Arabian medicine, to have been neither edified nor impressed. It would seem that in six hundred years they might have done more when we consider the six hundred years which elapsed between Hippocrates and Galen. We look in vain for any material advance in the knowledge of the nose and throat and their diseases made by the Arabs. It is to them, however, we owe the introduction into our pharmacopœia of the syrups and elixirs, so useful in affections of the throat as vehicles for drugs administered in them, which often derive from the vehicle a reputation quite ephemeral.

The Inferior
Maxilla.

It will be remembered that Galen supposed the inferior maxillary bone was not a single bone, but composed of two halves. This error, according to Sprengel, was pointed out by Abdollatif, who made the discovery by examining with care one of the many heaps of human bones which were so plentiful in the days when religion was propagated with sword and fire; and this was almost the extent of their contribution to the anatomy of the head and neck. They were familiar with uvulotomy and tonsillotomy and the removal of nasal polypi by the barbarous string method of Paulus Aegineta, Mesua using horse hairs twisted into a knotted string for the purpose. Rhazes, also an early Arabian writer (died 923 A. D.), was familiar with these methods. Tracheotomy was known to them only from Aegineta's description of Antyllus' operation. Even Albucasis, a late (died 1122) and perhaps the boldest, certainly the most brutal, of the Arabian operators, knew of no one in his time who had performed it. He had seen a nurse girl who had cut her

Tracheotomy.

windpipe and who had completely recovered when he sewed up the wound. Avicenna (980-1036), the Prince of Physicians and the greatest of the Arabian authors, simply describes the operation according to Paulus, while Avenzoar (died 1161) went so far as to try it on a goat. Avicenna, and many others of the Arabian writers, showed they were practical observers in likening some of the nasal polypi to hemorrhoids and advising the ligature for them. In this they were followed by many of the writers of the Italian Renaissance and even of much later times. Avicenna, whose work was a text-book of almost exclusive authority during the later Middle Ages, describes the anatomy of the nose and throat in a very poor transcription of Galen. He gives, however, a very good description of the disturbances of olfaction, recognizing the two varieties, viz., obstructive anosmia due to nasal stenosis and the essential form due to some central brain lesion.*

The use of the cautery, carried to such great extremes by Albu-
casis, was a favorite remedy for all sorts of affections. Baas
relates† how Mahomet, instead of resorting to a more spiritual and
miraculous method, advised a friend suffering from angina that he
should have an application made of the actual cautery. Johannus
Mesua Damascenus advised‡ the use of forceps for the removal
of polypi and afterwards the cauterization of their roots, or else
the use of hot forceps, but if this method was impossible he used
the horse-hair string. In this author we may find this remarkable
recommendation for the cure of inflammation of the palate (l. c.
Lib. II, Sect. II—Summa 1, Cap. 2). "The second method of
cure is the diversion of the cause, and this is performed in a man-
ner which causes the trouble to shift its seat, in short rubbing of
the ears and pulling them forcibly upwards, and the painful
stretching of them, and the application of cups to the opposite
part. For these things raise the inflammation and bear it upward;
and among those things which are useful in the elevation of it is
that a handful of hair should be grasped in the hands and the
patient told to keep silent. Then put thy feet on his shoulders
and drag strongly on the handful of hair, until the skin is pulled
up, for by such dislocation will the pharyngitis also be raised."
These patients probably complained as do our own that their
"palates were down."

The Cautery.

* Edit: Venice, 1562, p. 581 et seq., Lib. III, Cap. 4.

† "History of Medicine," Am. Ed., P. 219.

‡ Opera, Venice, 1589, Lib., II De Aegritud. Narium, Cap. 6.

* Some confusion exists among the Arabians as to whether the dung of a white dog or the white dung of a dog, to be obtained by feeding him on bones, was the proper medicament in angina. The swallow prescription is always mentioned in some form.

Nasal
Speculum.

In removing foreign bodies from the throat Janus Damascenus recommends, apparently as a variation of the sponge method we have noted in *Ætius*, the tying of a piece of half cooked meat on a string and bringing it up after it is swallowed. Nearly all even of this sort of surgery may be found among the late Greek writers of the Eastern Empire. Guy de Cauliac* refers to Haly Abbas using "un instrument appellé mirror au soleil" or in the Latin edition "speculum ad solem," for opening the nostrils in examining a nasal growth. On referring to the Latin translation of Haly Abbas by Michael de Capella in 1523,† it may be seen that the passages to which Guy apparently refers hardly warrant this rendering. In the work of Constantine, the African, "De Communibus Medico Cognitu," which is said to be an abridgement of Haly Abbas, nothing of the kind is to be found. We may conjecture that Cauliac read the text wrongly or that he had access to others which are not now accessible to us; but at any rate it is evident that Cauliac had some knowledge of such an instrument. Indeed the use of the cautery in the nose from the time of Hippocrates to the present presupposes the use of a tubular speculum at least.‡

From the fact that the processes are occasionally multiple with a common base of attachment and the Greek conception of them was embodied in the name polypus or many feet, we find the mediæval translations from the Arabic converting the name into the word "Scorpio." How accurately this expresses the Arabic word for polypus, I do not know.

Albucasis who used the cautery savagely for almost everything and apparently often at random, recommends burning the skin beneath the eyebrows for a bad odor from the nostrils.§ We may conjecture that this is related to the Libyan custom as related by Herodotus (l. c.) Some of the remarks of Albucasis in regard to operations on the nose and throat may be inserted here as interesting and illustrating somewhat the figures of the instruments taken from Channing's Latin version of his surgery. The exist-

* Edit.: "Nicaise," P. 328.

† f. 279, col. C., *Præct., Liber IX, Cap. 32.*

‡ According to Cloquet the speculum of Guy de Cauliac, or Haly Abbas, is figured in "L'Interpretations des Dictions Chirurgicales" which Laurent Joubert printed at the end of his edition of the "Grande Chirurgie de Guy de Chauliac," printed at Rouen in 1615.

§ Channing's Latin translation, Vol. II, P. 35, Sect. 14.

ence of these figures in the original manuscript was one of the forerunners of the introduction of woodcuts,* which antedated the invention of Guttenberg. It must be confessed that Channing's Latin text of Albucasis does not clearly correspond with the figures which accompany it.

"And when glands occur in the throat similar to the glands Tonsillotomy. which occur externally, they are called the two tonsils. When thou hast treated them with those things which I have mentioned and they are not cured, look and if the tumor is hard and of a dark color, of slight sensibility, do not touch them with the knife. And if it is of a red color and the base is broad do not touch it with a knife for fear of hemorrhage, but delay until it has ripened, for then thou canst perforate it or it will break of itself. But if it is of white color, round and has a slender base, this is the kind which is suitable and thou shouldst cut it. Thou shouldst examine before operation if the swelling has entirely disappeared or in what manner it has diminished. Then thou seatest the patient in the clear sunlight and takest his head in thy lap and openeth his mouth and taketh the instrument in thy hands which will depress his tongue, a concave instrument somewhat of this form (Fig. 1); thou canst



Fig. 1.

make it of silver or of brass; it should be thin like a knife; with this the tongue is depressed and the swelling will then be apparent to thee, and let thy vision fall upon it. Then thou shalt take a hook and fix it in one tonsil, and with it thou shalt draw it out as far as possible; but of course thou shalt not draw out with it any

* The earliest woodcut remaining to us dates from 1423, but there is ample evidence of the existence of the art long before this, in Venice and elsewhere.

of the membranes. Then thou shalt incise it with an instrument of this form (Fig. 2.) It is similar to a forceps except that the ends

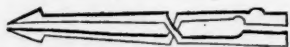


Fig. 2.

are curved and the edge of each is opposite the other and is very sharp. It is made from Indian or fine Damascus iron. But if this instrument is not at hand thou mayst cut it with a knife with this shape (Fig. 3)—sharp on one side, less so on the other. And some-

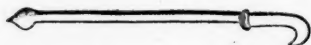


Fig. 3.

times other tumors than tonsils grow in the mouth. Thou wilt cut these out as thou doth the tonsils." (Liber II, sec. 36.)

A Post-Nasal
Tumor.

In short they were to be cut out with scissors or a sickle-shaped knife. Then follows the very interesting report of a post-nasal growth. "Once I treated the tumor of a woman which had grown in her throat. It was of a dusky color and not very sensitive. The woman was almost strangled, and from the constriction of the passage breathed with difficulty, and she was prevented from drinking or eating anything, so that she was reduced almost to the point of death, and she had been in this condition a day or two. The tumor so projected forward that two branches of it protruded from the nostrils. Therefore with the greatest promptitude I hastened to fix in one of these a hook and dragged on it, and that whole portion was pulled forward. Then I cut it off where I had pulled it out at the nostrils. Then I did the same for that which projected on the

other side. Then I opened her mouth and depressed her tongue. Then I fixed a hook in the tumor itself and cut off a part of it and only a little blood came from it, and the throat of this woman was free and she immediately drank water. Then I offered her some food. I did not cease to cut pieces from this tumor for a long time, but the new growth filled the place of the excised pieces until her patience and my own was exhausted. Wisely then did I act, and I cauterized the tumor up in the back of her throat and thereupon it did not recur. Then the woman left me and I know not what God did with her after me." These quotations, as literal as possible, from Channing's deplorable Latin, will indicate the manner of man this modest Arab was, and better than words of mine will portray the state of laryngological practice among the Arabs. It may be profitably compared with the procedures of Hippocrates in cases of nasal polypi, in order to realize the backward steps taken in 1500 years. Albucasis describes about the same methods of treatment for uvulotomy, following the injunctions of Galen. His directions for removing foreign bodies are much the same as those of the later Greeks. His remarks on laryngotomy I have referred to above. Love of the hot iron and dread of the knife characterized Arabian surgery, and they seemed more afraid of drawing blood than of inflicting atrocious pain. In all this we behold the result of defective anatomical knowledge.

And these were the votaries of science who guarded the portals of medicine for six hundred years. In other departments doubtless their achievements were great, but despite the great debt modern civilization owes to them, medical knowledge languished and we have only to be thankful that it did not entirely expire, that it was not wholly given up to amulets and charms and stercoraceous drugs, that mysticism and the occult, which we still have with us in the Faith Cure and the Mind Cure and all that foul brood of Darkness, did not in this period of weakness, when anatomy had perished entirely, overwhelm the Art of Medicine as it did in India. The spectre Orientalism still haunts us. It is a vague disembodied spirit, but it is the ever present foe of civilization.

For several centuries it was through the Arabs only, or perhaps it is better to say, chiefly, that Europe knew anything of the medicine of Hippocrates and Galen, but when the better editions of the early Greek writers came into the possession of the Italians, it was soon perceived how gross had been their rendering of them.

A CASE OF EPILEPTIFORM CONVULSIONS CAUSED BY SHOE BUTTON IN THE NOSE.

BY J. S. STEELE, M.D., MONTEREY, MEX.

Oculist Mexican National Railroad.

"Man is wonderfully and woefully made" when a shoe button in a boy's nose will throw him into daily convulsions, often as many as six or eight a day, and if not relieved make an idiot out of what would have otherwise been a very smart boy.

The case I have to report is of a boy, "Master T.," age about six and one half years. Family history good, has several sisters and brothers, one of which is younger than he, and all in excellent health. Master T. was brought to me November 12, 1900, for the purpose of examining and treating his catarrh, with which he had been suffering for about two years. He proved to be a fat, chunky, well-nourished boy physically, with a rather large head, and large ball spot on back of his head, in the center of which there was a sore; this ball place and sore was caused by the boy falling backward when he had a convulsion and continually bumping his head against the floor or ground during a convulsion. These convulsions made their appearance about two years before he was brought to me; at first they were light and not of frequent occurrence, but gradually grew worse and more frequent, until when I saw him they were of almost daily occurrence and often as many as six or eight a day, and very severe. Before these convulsions made their appearance Master T., for his age, was up to the average in intelligence, but shortly afterwards his mind, instead of continuing to improve, began to show signs of weakness, which increased until when I first saw him he had almost forgotten how to talk, or would not talk, nor play with the rest of the children; in fact, his mind seemed almost a blank. When brought to the table he would with both hands grab for anything he could reach; he could not be controlled, and was almost always hungry.

Master T. had been treated by the best native doctors in Mexico, and, no doubt, had taken almost everything in the pharmacopia recommended for epilepsy; and while under the influence of some strong nerve sedative would sometimes go as many as three or four days, but never more than five days, without a convulsion.

On examining his nose, both nostrils presented the appearance of a chronic catarrhal rhinitis, with a little enlargement of the middle

turbinated bodies. In the left side, situated between the middle turbinated body and septum and at about the junction of the middle and anterior third, was apparently a black crust which failing to wash or wipe out, I removed with forceps quite easily, and to my surprise it proved to be a shoe button, which from its appearance must have been in the nose for a long time, for it was rough, the enamel being nearly all worn off. On inquiry found out that the boy had not worn button shoes for about two years, the last pair he was wearing when the convulsions first made their appearance two years before. The boy had never learnt how to blow his nose, yet there was very little fetid accumulation in this nostril, and after three days it was almost impossible to tell that there had ever been a foreign body in the nose. The nose was treated locally for his chronic rhinitis, with antiseptic sprays and applications of protargol, iodine, etc. At this time he was taking large doses of potassium bromide, which doses I ordered decreased until on the sixth day they were discontinued. The daily treatment of the nose was kept up. On November 28th the convulsions returned, but not so severe, yet were of daily occurrence for five days. On the fifth day I thoroughly cauterized the middle turbinated body at point where button had been pressing, with the result of again checking the convulsions until December 24th, when he had a very mild attack, also one on the 25th, which was the last he has had. I feel confident that he is entirely cured. About all the internal treatment he had was a laxative quite frequent and the infusion of valerian symptomatically. Master T.'s mind began to improve shortly after the removal of the button, and, although not entirely well, he is very much better and on a good road to complete recovery. On June 22d I removed the right tonsil, it having become quite enlarged in the last two months. One characteristic of Master T.'s convulsions was that he would always fall backward, and shortly before the button was removed would foam at the mouth and cry out a great deal. I was not fortunate to see the boy in convulsions, but from all the information I could get these convulsions were due to a reflex nervous irritation caused by the button in the nose, and not the obstruction caused by the button, which was much less than would be expected. In almost all the cases I have seen reported of convulsions caused by foreign bodies in the nose they were of a character pointing to the obstruction in the nose as the principal if not the sole cause of the convulsions, and not as in this case to a direct nervous irritation.

The father and mother were even more surprised than I that the boy had any foreign body in the nose.

July 30, 1901.

RECURRENT PARALYSIS WITH COMPLETE APHONIA PASSING INTO ABDUCTOR PARALYSIS, WITH RETURNING SINGING VOICE.

BY J. W. GLEITSMANN, M.D., NEW YORK.

Although several cases of paralysis of the recurrent nerve terminating in abductor paralysis are recorded in literature, and undoubtedly a great many more have been observed, but not reported, I considered the case of sufficient importance to publish it for scientific as well as clinical reasons.

It is only a few years ago that an animated controversy took place as to the explanation of the position of the vocal cord in recurrent paralysis, and although the consensus of the majority of writers declared themselves against the new role and action attributed to the cricothyroid muscle in this connection, a renewed and earnest study of this question was the consequence, productive of many valuable essays.

The greater part of this recent work consisted in experimental researches, and the clinical observation contributed very little to the support of this subject. But Semon himself has said that as valuable as the physiological experiment always will be, we should not underrate the importance of the clinical evidence, and his doctrine of the greater vulnerability of the abductor muscle¹ was primarily entirely deduced from and based on careful clinical observation. The explanation attempted for this greater vulnerability were more or less hypotheses, till Risien Russell found that the nerve fibres for adduction and abduction of the vocal cords are running in separate bundles during the whole course of the nerve trunk, and that the fibres for the abductors are at the inner, tracheal, those for the adductors on the outer side of the recurrent (² and ³.) A second, but not less important discovery of a differentiation between the adductor and abductor fibres is of more recent date by Grabower.⁴ He found by a new method of staining a considerable difference in the ultimate endings of the nerve fibres in these antagonistic muscles, and believes that future and more extended investigations will throw additional light upon the causation of prevalent abductor paralysis.

It is not my aim to enumerate the different reasons produced to prove the greater proclivity of the abductor to disease, and I

desire to dwell only upon one argument, which is supported by the case to be related. If it be true, that the adductor muscles have more resistance and that the abductor is easier and earlier affected by injury or central lesions, it has been logically inferred, that the adductor will quicker recuperate than the abductor, when a recurrent paralysis shows any tendency to improvement. Of such cases reported, the case of Semon⁵ is probably the most remarkable one in which a recurrent paralysis with almost complete loss of voice terminated in an abductor paralysis, enabling the patient to resume his vocation as professional singer. On the other hand, Elsberg⁶ relates a case, in which a bilateral recurrent paralysis turned into a bilateral abductor paralysis, necessitating tracheotomy to avoid suffocation. Similar cases of unilateral recurrent and later abductor paralysis are reported by Makins⁷, Williams⁸ and others, all proving the greater recuperative power of the adductor, whilst the abductor remained paralyzed.

The case in question is also not any less interesting from a clinical point of view for two reasons: first, the complete recovery of the voice with ability to sing after a long period of absolute aphonia, and the question of the etiology of the recurrent paralysis, both of which features will receive due consideration in the following history:

Male, forty-five years of age, well built, strong muscular frame, weight 180 pounds, with six feet in stockings; traveling agent, acquired syphilis twenty-five years ago. The initial lesion was comparatively light, and followed by the usual roseola and a swelling of the cervical and inguinal glands. The patient, being very conscientious, received at that time and at all times later on, proper treatment and was always a most willing obedient patient. He remained free from all symptoms till twelve years ago, when he felt pain in the tibia and developed plantar psoriasis, from which he recuperated after one month.

His present lesion dates from December, 1900, when his breathing became difficult, and in January, 1901, actual dyspnea with stridulous respiration set in, whilst his voice remained clear. He was examined at short intervals by five physicians in a foreign country, who all made the diagnosis of "aortitis" and after energetic specific treatment—the maximum dose being 12 grs. iodide potassium a day—the patient felt relieved.

February the 5th, his voice suddenly had disappeared in the morning, whilst the evening before it had been clear and strong, and his aphonia lasted with very little amelioration almost four months, but without a recurrence of the dyspnea. Latter part of

May he was examined with the laryngoscope and a paralysis of the left recurrent nerve was found.

I saw the patient the first time June 5th, and found the following condition of the larynx: No perceptible hyperemia, no infiltration of any part, except a slight bulging of both ventricular bands, the right vocal cord normal as to color and movement, the left standing immovable midway between adduction and abduction, and visible only with difficulty on account of the enlarged ventricular band. At phonation the left cord remained in the same position, but a very slight oscillation of the arytenoid was perceptible. In addition a complete paralysis of the left internal tensor existed which produced a strong curved line of the cord with the convexity outwardly.

Inspection of the neck revealed nothing abnormal, and except the loss of his voice, the patient suffered only from an accumulation of mucus, produced at the slightest irritation and a slight difficulty of respiration when walking briskly or climbing stairs. As repeated examinations of the chest did not give me a satisfactory explanation of the previous severe dyspnea and the development of recurrent paralysis after the former had materially improved, I sent the patient later on to a prominent clinician, who stated to me, that he found a stenosis of the left bronchus, caused either by pressure from a mediastinitis, enlarged glands, or by a syphilitic bronchitis. He believes, that either of these affections would fully explain all the symptoms of the patient.

His laryngeal condition improved very slowly. The local treatment consisted in disinfectant and astringent atomization and daily applications of the faradic current in the region of the recurrent, and several times also endolaryngeally. His voice gradually came back, but it had such a coarse raucous sound, that it impressed me as being produced mostly by the ventricular bands which by the continuous effort to speak had become still thicker. I, therefore, made an energetic cauterization of their free edges with trichloroacetic acid and when the eschar had exfoliated, I had the satisfaction of obtaining also a full view of the left vocal cord.

The first visible improvement was not an improvement in the adduction of the cord, but a gradual and slow disappearance of the internal tensor paralysis. I was very careful to make sure of the correctness of this observation, and about a week after the convexity of the cord had passed away, adduction began to set in, which improved much quicker with the result that latter part of July the patient had regained his full voice, and is now able to

sing a full scale in clear, loud sounds without interruption. I believe if he ever had any training, he would also be able to resume a professional career.

The above laryngeal conditions were also verified by two of my assistants, who treated the patient during a short absence from the city.

The scientific side of the question I have already dwelt upon sufficiently not to enlarge upon any further. The clinical interest centers in the successful restoration of a vital function, a rare event in complete recurrent paralysis of over four months' duration. But the development of the paralysis is to my mind not less interesting, appearing after a severe dyspnea had almost disappeared. Not knowing the condition of his chest at the time, it is difficult to explain this singular occurrence, as it would only be natural to expect the paralysis to appear at the climax of the chest trouble. In my opinion, the most probable explanation is that aside from the aortic and bronchial affection the gummatous process in the mediastinum being in the beginning soft in character, did not exert a pressure on the recurrent, but that it formed in the course of absorption and cicatrization a denser scar tissue, in which the nerve was imbedded and thus deprived of its normal function.

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ANILIN OIL, WITH REPORT OF A CASE SHOWING TOXIC SYMPTOMS FROM ITS USE IN THE EAR.

BY HOMER DUPUY, A.M., M.D.

Assistant Surgeon Eye, Ear, Nose and Throat Hospital, Clinical Assistant to the Chair of Otolaryngology, Rhinology, Laryngology, New Orleans Polyclinic, New Orleans.

In the July, 1901, issue of *THE LARYNGOSCOPE* I contributed a paper on: "The Production of Local Anesthesia in the Ear." In the communication I sounded the praises of a mixture containing: Cocaine, absolute alcohol, anilin oil, for the reason that this solution in fifty recorded cases produced complete anesthesia of the tympanic membrane.

Increased experience, both in hospital and private practice, has but served to emphasize the statement that we are at last in possession of an anesthetic solution which bids fair "to fill a long-felt want in aural surgery."

Dr. Gray, of England, to whose ingenuity we owe this anesthetic mixture, reports that he has not had any trouble with symptoms of intoxication either from the anilin or the cocaine.

On the principle that anilin readily penetrates thickened and inflamed tissues, its use as a vehicle for anodyne "ear-drops" seems plausible.

I therefore tried the combination of cocaine with anilin oil in two or three cases for the relief of ear-ache, placing the solution in the hands of the patient, with instructions to instil into the canal every hour until relieved. No ill effects were noted.

In the following case, however, profound intoxication ensued: Miss E. P. w. f., æt. seventeen, operated July 31, 1901, for acute supp. endomastoiditis, secondary to an otitis media. Three weeks after the operation, at which time all discharge from the middle ear had ceased, and mastoid wound was closing rapidly, a diffused inflammation developed in the right auditory canal.

Exhausting all my therapeutic resources without affording relief, I decided to make free incisions along the walls of the canal. The patient strenuously objected. I then prescribed a local anodyne composed of cocaine, 15 grs., anilin oil, 1 oz., with directions to heat solution, and with a dropper to instil about 15 gtts. in the meatus every hour.

When I saw the patient that night at 8 o'clock she had been given four instillations and appeared greatly relieved. Her mother

called my attention to her drowsy condition, which I attributed to exhaustion and the relief from pain. Subsequent developments, however, proved this to have been the initial stage of a powerful intoxication. Before leaving I ordered the instillations to be used only every three hours.

About 9 o'clock the same night the patient complained of "feeling faint," uttered a loud cry, immediately lost consciousness, and in the words of the attendants "became perfectly blue in the face."

I was telephoned, being absent, Dr. Guthrie, by request, hastened to the call. Here is his own statement:

"When first seen at 11:30 p. m. patient was in a state of extreme prostration. Grave as was her condition, her mother informed me that she had been much worse just after the attack of syncope at 9 p. m.

Lips and nails were of a bluish-black color; face ashy in hue, skin cold and clammy. An intense sweat bathed the entire surface of the body. Pupils were apparently normal; pulse 136 and compressible, respiration 36, sighing in character, temperature by axilla 97.3° F.

My first thought was the probability of poisoning by some of the "coal tar" derived antipyretics. Enquiry elicited the fact that she had taken at intervals of about five hours for two days previous compressed tablets composed of acetanilid, gr. $3\frac{3}{4}$, codeine, gr. $\frac{1}{4}$. At first this satisfied me as an explanation; but further consideration convinced me that this alone could not have produced the symptoms. If idiosyncrasy existed it would have manifested itself before.

Further enquiry revealed that one-half dropperful of "ear-drops" had been put into the ear hourly from 4 p. m. to 8 p. m. The mother informed me that the "drops" contained cocaine. However, suspecting anilin oil, knowing it was being used by instillation, I poured a small quantity of the liquid upon water and had my suspicions confirmed.

I washed out the ear and administered atropine gr. $\frac{1}{100}$ and strychnine sulph. gr. $\frac{1}{30}$ per orem, every two hours. spts. ammonia aromat. m. x. every hour. Hot bottles were placed about patient and brandy given at frequent intervals. At this stage Dr. Dupuy came in and we consulted."

When I saw the patient that night at 12 o'clock I was immediately impressed with the peculiar dark-blue color which tinged her face and hands. The attendants assured me that this color had faded away considerably and that she began to look herself again.

Though conscious she was still very drowsy ; temperature, pulse and respiration had not changed since Dr. Guthrie's first examination. I first thought of cocaine intoxication, but on further analysis of the complex of symptoms presented by the case, and on eliminating all other probable causes, I was forced to the conclusion that anilin oil must be the responsible agent. At 2 a. m., when I left her, she had improved considerably.

The next morning her lips and finger-nails still presented a decided dark-blue tinge, but the rest of the body had regained its normal color. Atropine, strychnine and ammonia were kept up the whole night, yet the pulse was 136, small and thready. This cyanosis of the lips, finger-nails and the rapid pulse persisted for almost twenty-four hours. Though extremely weak for several days she made a final recovery.

* * *

A review of the pharmacology of anilin shows that for some time after its discovery chemists regarded it as non-toxic.

But its extensive application as a coloring agent in the industrial arts has brought to light the fact that it is highly poisonous. Cases are recorded in which its toxic powers were manifested through inhalation and by cutaneous absorption. The peculiar dark blue color of the cyanosis, its persistency around the lips and under the finger-nails, phenomena so marked in my case, are *essentially characteristic of anilin poisoning*.

Dr. A. Gray, in *The Lancet*, March, 1901, remarks that several of his patients, on whom he had used the solution for local anesthesia in the ear, told him that an hour or two after using the solution their friends noticed this peculiar color about the lips. No untoward symptoms were present in these cases. He claims that the cyanotic tinge is due to the transformation of oxyhemoglobin into methemoglobin, and always passes away in a few hours without ill effects.

Dr. StClair Thomson, in *The Lancet*, April, 1901, reports a case of furunculosis of the external meatus, in which he used cocaine with anilin oil as a menstrum.

A small pledget of cotton wool moistened with the solution was used in the canal at bed time. It afforded great relief. Next morning, as pain returned, the drops were used again at 5 a. m. At 7:30 a. m. the typical blue color from anilin poisoning appeared on the face, lips, tongue and hands. No fever or mental disturbance. Pulse small and somewhat rapid. Pupils normal. Examination of the heart disclosed acute dilatation of the organ. The area of cardiac dullness, notably increased during the intoxication, returned

to normal in the course of the day.* The cyanosis likewise disappeared.

REMARKS.

Though admitting the actual occurrence of aniline poisoning by local absorption through the external meatus, this contingency must be infrequent.

The experience of the staff at the Eye, Ear, Nose and Throat Hospital corroborates the above statement. In the last eight months the solution composed of cocaine 20 grs., absolute alcohol and anilin oil 50 minims each, has been used on a hundred cases for tympanotomy in acute otitis media, and yet not a single instance of drug poisoning, even in the milder form referred to, has come to our notice.

From this rather extensive experience we are fully justified in using the mixture for operative work on the drum and contiguous parts; on the other hand, WE CANNOT WITH IMPUNITY PLACE SO TOXIC AND SO READILY ABSORBED AN AGENT AS ANILIN IN THE HANDS OF PATIENTS FOR PURPOSES OF FREQUENT INSTILLATION.

Tympanotomy once performed, the canal should be thoroughly syringed, thus removing the danger of further absorption.

ACUTE SUPPURATON OF THE FAUCIAL TONSIL AND PERI-TONSILLAR TISSUE.*

BY M. A. GOLDSTEIN, M.D., ST. LOUIS, MO.

It is an unusual fact, and one worthy of special consideration, that while the etiology and focus of infection in acute suppurative processes of superficially located tissues and organs are fairly well known, that of the peritonsillar tissue is still shrouded in obscurity.

The faucial tonsil has now come to be regarded as a most formidable point of entrance of pathologic micro-organisms, and in this role a recent author writes of it: "There are five main avenues of infection of the system. 1. The Respiratory Tract. 2. The Alimentary Canal. 3. The Genito-Urinary System. 4. The Skin. 5. The Faucial Tonsil.

It is well established that the opportunity for infection and the development of acute suppuration of the tonsillar and peri-tonsillar tissue is unusually favorable, yet a suppurative process limited to the tonsil per se is very rare. Infection of the tonsillar crypts, superficial ulceration, membranous or caseous deposits in the follicles or over the surface of the tonsil, are very common conditions, but acute suppuration limited to the tonsil, going on to abscess formation is an extremely rare condition.

It is the peritonsillar tissue which seems to be the locus minus resistentia; for whenever an infection of the tonsillar area is followed by abscess formation, it is here that the suppurative process is concentrated.

At first glance it would appear easy to trace the etiology of an infection of the supratonsillar fossa, but when the clinical factors are gathered and the anatomical relationship of the parts carefully considered, we meet with numerous difficulties in arriving at a definite conclusion. It is a frequent clinical observation that peritonsillar inflammation and suppuration may occur without any apparent inflammation of the tonsil. In fact, I have frequently seen intense abscess formations in this area where the tonsil was small and apparently healthy.

On the other hand, the faucial tonsil may be involved in an intense acute inflammatory process and the inflammation may be

* Symposium—Presented at the Seventh Annual Meeting of the American Laryngological, Rhinological and Otological Society, May 23, 1901, at New York.

absolutely limited to this area. I would add to these conditions another observation, that we may have an acute inflammatory process superimposed upon a long-standing pathological condition of the faucial tonsil and often under these circumstances with a much lessened power of resistance of the accompanying glandular tissue, no peritonsillar infiltration takes place. Or, we may have a peritonsillar abscess conjointly existing with a hypertrophied tonsil with gaping crypts and a parenchyma whose power of resistance is far below par, and still the tonsil itself may not be involved in the suppurative process. If, then, a close relationship exists between the tonsillar and peritonsillar structure, why should there not be a more ready diffusion or infection of a suppurative process from the tonsillar to the peritonsillar tissue or vice versa.

We have not yet found sufficient evidence to support us in the conclusion that infection of the peritonsillar area is dependent on infection of the crypts or parenchyma of the tonsil, at least not by direct continuity of tissue. I am rather inclined to the opinion that the glandular and lymphatic element of the tonsil plays an important role in the transmission of pyogenic infection to the peritonsillar tissue.

As the etiology of peritonsillar inflammation has not yet been definitely determined, our pathology and even treatment of this condition still remains somewhat imperfect. The diagnosis and symptomology of acute suppurative tonsillitis and peritonsillitis is usually simple and requires no consideration in this paper.

Another observation to indicate that our knowledge of this acute inflammation is imperfect is the fact that no matter what line of treatment is instituted, the disease usually runs its natural course, terminating in abscess formation and spontaneous perforation.

Early surgical interference appears to me rational and sometimes even imperative to avoid sequellæ and the possibility of a burrowing abscess. I would not assert that an early incision, made before the formation of pus can be determined, should be considered an abortive measure or one that will cut short the course of this affection, yet I wish to emphasize the importance of this procedure as a prophylactic and as a means of avoiding complications.

We select as the area of such incision into the peritonsillar tissue a point half way between the posterior pillar of the fauces, and the proximal edge of the uvula, about three-eighths of an inch inward from free edge of the soft palate. A guarded bistoury entered at this

point in a direction downward and somewhat inward, cutting from the tonsil toward the median line, usually penetrates the most indurated portion of the peritonsillar tissue. I follow the incision of the bistoury by the insertion of a long, angular, narrow, blunt forceps, entering the wound with the forceps closed and then spreading the blades widely, and in this manner cause a fair-sized cone-shaped wound, with the base of the cone located in the depth of the supratonsillar fossa and with a small aperture at the entrance of the wound. The object of this technique is to produce a free drainage at the point where pus formation and abscess most usually occur, and to maintain but a small wound opening in the oropharynx, so that there may be as little opportunity for infection as possible. I pack this cavity with a half-inch strip of selva-edge iodoform gauze, and direct the patient to keep the pharynx as clean as possible by the frequent use of antiseptic gargles and sprays.

If this surgical intervention has preceded the formation of pus, a natural free drain is already established when pus begins to form. This overcomes the necessity of the natural process of the pus forcing its way by pressure through the point of least resistance. This is most usually about the pillar of the fauces, but in some instances the spreading of the abscess may be directed into: 1. The deeper cervical structures terminating in a perforation externally; 2. In a direction downwards accompanied by intense edema with the tendency of this edema to spread to the glottis; 3. The filling of the abscess sac upwards into the naso-pharynx, where the pharyngeal orifice of the Eustachian tube may be attacked and a consequent purulent inflammation of the middle ear ensue. 4. Where the deeper structures are involved and a free drainage is established with difficulty, necrosis may result, and in extreme cases the internal carotid artery or jugular vein may be attacked.

I believe that early incision, even before pus formation can be determined, is a wise prophylactic measure; even though we may not succeed in aborting the course of this process.

It may be of some interest to enumerate some of the conditions accompanying acute peritonsillar abscess and their radical treatment. Where early incision is undertaken, edematous infiltration of the adjacent tissues often occurs; for this edema prompt and free scarification is indicated. As a topical application to subdue such edema, my best results have been recently obtained with a solution of adrenalin chloride, 1:1000, sprayed or mopped on after scarification.

I place but little reliance on medicines given internally in this condition, but use sodium benzoate in 15 to 20 grain doses every three or four hours, alternating this with 20 to 30 drop doses of tincture of chloride of iron given at like interval.

Much comfort may often be derived by injecting a solution of 2 to 3 grains of menthol, 2 grains of camphor, 2 or 3 drops of oil of sandalwood to the ounce of benzoinol. This may be directed to the posterior nares by attaching a soft rubber catheter to a small syringe and passing it through the nares to the pharynx. This is especially grateful in so many of these cases where the patient is unable to open the mouth, and where the pressure of the infiltrated tissues causes pain in the naso-pharynx with the extension upward to the ear or downward to the larynx.

In conclusion, then, I wish to emphasize: (*a*) that acute abscess formation in the tonsil per se is extremely rare; (*b*) that our knowledge of the place of entrance of infection into the peritonsillar tissue is still uncertain; (*c*) that the many measures thus far suggested to abort this condition have been unsuccessful; (*d*) that early surgical interference, even before pus formation has been established, is our best prophylactic procedure.

GLANDULAR COMPLICATIONS OF TONSILITIS AND PERITONSILITIS.*

BY TALBOT R. CHAMBERS, M.D., JERSEY CITY, N. J.

It is a matter of deep regret to me that under this heading I am unable to bring before your consideration anything new or startling. And, after consulting the extensive bibliography on the subject and a limited personal experience, shall simply record a few personal convictions.

In the first place, it has been asserted that the tonsil is not a gland. How is this reconciled with Osler's statement, that there is cytogenic action of the glands including the tonsil? Why does the swollen tonsil diminish on the administration of guaiac? which it does. The tonsil certainly contains a system of lymph vessels in direct connection with the vast system of the surrounding tissues. This it is that makes it a wonder that in infectious tonsillitis the other glands are not always seriously involved. Before the microscope and serum application to suspicious cases of acute throat troubles, what a comfortable aid to diagnosis was the swelling of the cervical glands, which confirmed the fear of true diphtheria.

During the past year gland involvement, in my experience, has not been a frequent occurrence; and those coming under my notice, have been chiefly in dispensary practice.

Guaiac, in small and frequently repeated doses, has caused a subsidence of the acute swelling of the submaxillary and other glands, even of the parotid, in a number of cases. In chronic cases iodine and ol. morrhuae have given positive proof of the efficacy of the combination.

Enucleation is to be preferred to incision and curettage. The wound heals by first intention generally, whereas the fistula left after incision, is sluggish and often unsatisfactory.

Rubbing or bruising of acutely or chronically inflamed glands, is most reprehensible, for it defeats the very purpose for which it is done.

I have to report an unusual number of cases of what Jonathan Wright calls pachydermis laryngis, confined to that portion of the

* Symposium—Presented at the Seventh Annual Meeting of the American Laryngological, Rhinological and Otological Society, May 23, 1901, at New York.

pharynx just behind the posterior palatal pillar. My attention has been called to this condition by ear symptoms, such as deafness, otitis media and even mastoiditis. These were complications of what is known as the hidden tonsil. Enucleation of this hidden tonsil has, in a number of instances, set free a surprising amount of unsuspected mucus and smegma. It should not seem strange that these collections of foreign matter, situated so near the opening of the Eustachian tube, would have so direful influence upon the auditory apparatus. I am convinced that in certain cases successful treatment of otitis and mastoiditis must be supplemented by curing this pachydermis laryngis. The employment of adrenalin and cocaine has robbed the operation of most of its difficulties. After removal of the hidden tonsil, the treatment of the hypertrophy of the mucosa becomes simplified, and it yields to suitable constitutional and local measures.

CHRONIC OR RECURRENT PERITONSILAR ABSCESS.*

BY H. J. HARTZ, DETROIT.

Is due to abnormal anatomical relationship of the plica triangularis, supra tonsilar fossa and tonsils. Fibrous adhesions between these organs predispose to lacunar abscess, which burrowing into cellular tissue investing the tonsils cause peritonsilar abscess. Adhesions and an enlarged upper portion of the tonsil obstruct the outlet of the supra tonsilar fossa, causing suppuration in this space which extends into the pharyngo-maxillary space producing a chronic abscess which ultimately discharges through a fistula in the soft palate region. The tonsil region, like the vermiform appendix, is subject to abscess formation through inflammatory adhesions. The pent up secretion becomes a culture medium for pathogenic germs. Surgical measures are the indications for treatment. Excision of the upper portion of the tonsil obstructing the supra-tonsilar fossa and the removal of the plica triangularis adhesions by punch forceps. Four cases reported showed on post mortem latent encysted intra-follicular abscess, made active by an acute angina and caused death by pleurisy, septicæmia, endocarditis and pyæmia.

* Symposium—Presented at the Seventh Annual Meeting of the American Laryngological, Rhinological and Otological Society, May 23, 1901, at New York. (Author's Abstract.)

UNUSUAL FOREIGN BODY IN PHARYNX.

BY W. STANLEY SAMSON, M.D., LANCASTER, OHIO.

Mrs. L. S., æt. thirty-three, presented herself in April of this year, giving a specific history, and stating that the initial lesion was contracted six years ago from her husband. The voice was husky and guttural. On examination of nose the bony septum had entirely disappeared, leaving only the cartilaginous portion as support. The other intra-nasal structures were not materially interfered with, excepting a small point of necrosis on the posterior portion of the right inferior turbinate. On inspection of the pharynx an unusual picture presented itself. A quadrangular plate of bone could be seen resting in an artificial pocket formed by a band of tissue from

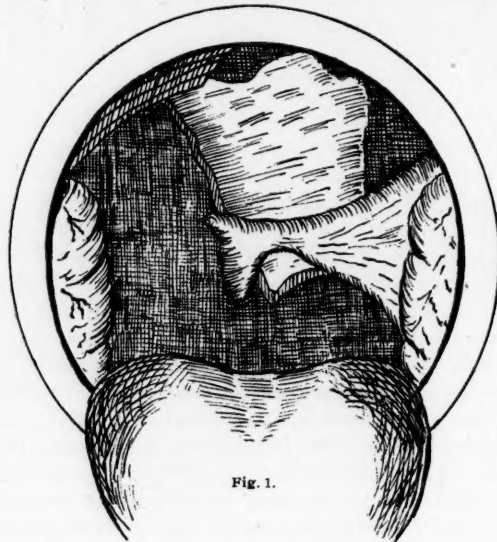


Fig. 1.

the soft palate. It is reasonable to infer that a large ulcer perforated the velum palate, eating away the point of attachment on the right side, consequently the free portion fell forward and finally became attached to the posterior wall in the center of the pharyngeal space. The above diagrammatic illustration will serve to demonstrate the appearance of the pocket, and the bony septum resting therein, adhering closely to the pharyngeal wall. The plate of bone after removal measured 25×32 m.m. Strange to say, the foreign body gave very little discomfort and did not interfere with respiration or deglutition. The ulcerative process having entirely subsided, removal of pocket was advised, but refused.

SOCIETY PROCEEDINGS.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY.

SEVENTH ANNUAL MEETING.

Held in New York, May 23, 24, and 25, 1901.

A Case of Corrected External and Internal Deformity of the Nose. DR. T. PASSMORE BERENS (New York City). This paper will appear in full in a later issue of *THE LARYNGOSCOPE*.

DR. OTTO J. STEIN, of Chicago, said he understood a forceps had been used to break loose the nasal bones from their attachment to the frontal and superior maxilla. He had himself done this operation several times, and on the last two occasions had experienced great difficulty in breaking the bones loose from the superior maxilla. The condition brought about by the blows had been so severe that it did not seem to him that its repetition was warranted.

Thrombus of the Lateral Sinus.

DR. THOMAS J. HARRIS, of New York City, presented a case of thrombus of the lateral sinus. The patient was a man, about twenty-three years of age, who had been admitted to the hospital on April 3d, with a history of pain and otorrhea for about one week, and a swelling in the neck. There was no elevation of temperature at the time, and he complained only of frontal headache. A few days later an exploratory incision was thought to be necessary, and accordingly the mastoid cells had been opened, but nothing had been found. On going into the sinus a long clot had been found and removed. From that time to April 17th he had done well, but on a return of the symptoms the incision had been extended to the clavicle and the jugular vein opened. No clot had been found until the facial vein had been reached. The man had been very ill for several days afterward, and had had a metastatic pneumonia. At no time had there been any tenderness over the mastoid, and no pus had been found in this region. The pain complained of had been almost wholly over the frontal lobe of the brain. The symptomatology of this case had been quite obscure.

DR. M. D. LEDERMAN, of New York City, said that one must not expect to find the classical symptoms either in sinus or mastoid

disease. In one of his own cases there had been a running ear for ten weeks, but none of the classical symptoms of mastoiditis. The usual mastoid operation had been done, and no disease of the sinus found. Paracentesis had resulted in the withdrawal of blood. In his opinion such a procedure was not sufficient; it was better to make a bacteriological examination in addition. After a week or two, in this case, the sinus had been exposed and jugular thrombosis found. The vessel had been ligated near the clavicle and opened, but no blood found. Owing to the very bad condition of the patient, the complete operation had not been done. The patient had ultimately died. In another case there had been active involvement of the mastoid in a woman who had had one chill. The sinus was curetted to within one inch and a half of the tercula, and jugular exposed. It was tied close to the clavicle and opened, and a turbid fluid was found. About ten days afterward there had been an elevation of temperature and a swelling of the neck. On cutting down upon this, no pus was found, but an inflammation of the veins existed. Under a wet dressing the patient had made a good recovery.

DR. WALTER B. JOHNSON, of Paterson, N. J., said that he had had a similar case to the one presented by Dr. Harris. The patient had presented all the symptoms of homesickness, and in consequence she had been sent home. She had temporarily improved. When the true nature of the case had been discovered operation on the jugular had been advised, but had been declined, and the patient had died.

DR. HARRIS said that it should always be remembered that it was not necessary for the patient to have a decided chill before one felt justified in making a diagnosis of involvement of the sinus. In the case under discussion there had been no chill, but there had twice been chilly sensations. With high temperature and chilly sensations one was warranted in making an exploration.

The Nature of Cancer.

DR. HENRY L. WAGNER, of San Francisco, presented drawings illustrative of the work done by an investigator in this city on the nature of cancer. About two months ago this gentleman, Dr. Eisen, had become infected with cancer, and was now practically in a dying condition. His important and interesting research had been completed about two years ago. This gentleman had even studied the development of the spores in his own case. Upwards of seventy cases of carcinoma had been investigated in this way, and the results would eventually be published in book form.

Traumatic Dislocation of the Left Arycartilage. DR. H. L. WAGNER (San Francisco).

A Congenital Deformity of Both Auricles. DR. WAGNER (San Francisco).

DR. W. FREUDENTHAL, of New York City, said that he had seen several cases in which he had suspected fracture of the cartilages and in them crepitation had been elicited, but in these persons, as well as in others, this crepitation was normal.

DR. WAGNER said that in his case there had been crepitation at first, but it had very quickly disappeared, whereas, in cases of infraction or fracture that he had observed, this crepitation had existed much longer. He was of the opinion that when the ary-cartilage was slightly separated from the cricoid joint there would be crepitation.

Disease of the Upper Air Passages in Relation to the Mental Development.

DR. L. F. PAGE, of Indianapolis, Ind., read this paper. He said that the intimate relation between the blood spaces of the mucous membrane and the subarachnoid space had been thoroughly demonstrated, and an equally intimate relation exists between certain venous regions of the nose and the interior of the skull. The capacity of the lymphatics of this region for absorbing toxins was often observed in diphtheria, and impure blood was one of the causes of interference with mental development. Engorgement of the erectile tissues and the irregularities of the nasal cavities often interfere with drainage, and so give rise to contamination of the blood. A study of the anatomy of the nasal fossæ showed plainly that this region should be a fertile source of reflex disturbance, and it was not difficult to imagine that such irritation might exert an important influence on the psychological function of the brain. A bony spicule or an enlarged turbinate, by constant pressure and irritation, may cause exhaustion of its special center, and gradually and secondarily affect the whole nervous system. Constant overstimulation meant exhaustion sooner or later. The author said that he had been often impressed by the mental defects exhibited by children with adenoids and enlarged tonsils, and the mental improvement which followed the removal of these pathological conditions.

DR. PRICE BROWN, of Toronto, Can., said that the effect of the presence of adenoids or other hypertrophic lesions in retarding the mental development was very evident, and the fact should be noted

and emphasized. Two children had been recently brought to him with the statement that while they had been bright and intelligent in infancy, they were becoming more and more dull and stupid. Examination showed the post-pharynx obstructed by adenoids, and the younger child had never breathed through his nose. These facts should actuate the physician to inform the parents of dull children regarding the reasons for such lack of mental development.

DR. GEORGE L. RICHARDS, of Fall River, Mass., said that he had recently seen a boy who had become so dull that he had refused to go to school any longer because he realized how backward he was. On restoring nasal respiration the child's mental condition had rapidly improved.

DR. E. E. HOLT, of Portland, Me., said that this brought up the necessity for having a school physician who should not be in general practice, and who should be unusually well qualified and broadly educated. He thought every member should use his influence towards securing proper medical supervision at school. He also thought that the records which would accumulate as a result of such a system would prove most valuable from a sociological point of view.

DR. SARGENT F. SNOW, of Syracuse, N. Y., said that the general practitioner should be impressed with the fact that not only did adenoids exert a bad influence on the general development, but that good ventilation of the olfactory region must be secured. Mention was made of a boy who was becoming dull mentally, yet examination showed only occlusion of the middle and superior air passages. General medical treatment and simple local applications had speedily changed the whole complexion of the case. He had a case of epilepsy, which was undoubtedly due to intranasal pressure.

DR. FRED. C. COBB, of Boston, Mass., thought that it was most important for the specialist to ascertain just what pathological states give rise to reflex disorders and what cases of this kind can be cured.

DR. JAMES F. MCCAW, of Watertown, N. Y., cited a case in which he questioned if the apparent mental deficiency was not due to deafness. He was of the opinion that the mental deficiency found in children with adenoids was often not directly the result of the adenoids, but of the associated impairment of hearing.

DR. L. A. COFFIN, of New York City, also thought the dullness was often apparent rather than real. There was frequently a loss of self-confidence, which was restored by operation. The main factor seemed to be a lack of perception. The child with the stuffed-up nose was engrossed with himself, and could not give attention to his teacher without the exercise of more self-control than he could exert.

DR. FRED. T. ROGERS, of Providence, R. I., said that for some years it had been the custom in Providence to place the backward children of the city in special schools. At one time he had examined the children in one school, and about seventy per cent of them had been found to be suffering from obstruction of respiration or from

some high error of refraction. He personally knew of certain of these children who had been taken out of these special schools and returned to the ordinary schools because of the mental improvement resulting from treatment directed to these defects.

DR. ALVA B. ABRAMS, of Hartford, Conn., said that he found patients and physicians seemed to derive much comfort from the statement unfortunately often found in the text-books, that adenoids and similar growths shrink up and give rise to less trouble in later life. While, of course, this was the result exceptionally, it would be better if physicians would forget that this happy termination ever occurs.

DR. PAGE, in closing, said that he had met with several cases in which children who had been late in talking had very soon acquired the power of speech after an operation for the removal of adenoids, and from this he inferred that the presence of adenoids sometimes interferes with the development of the speech center.

Tubercular and Syphilitic Granulomata of the Nose.

DR. WILLIAM LINCOLN, of Cleveland, O., was the author of this paper. In it he reported two cases of granulomata of the nose, presenting similar appearances, though one was tuberculous and the other syphilitic in nature. The first case was that of a woman of forty-six, who had contracted syphilis five years previously. Six months before coming under observation obstruction of the right nostril had begun. Examination showed a rounded, non-pedunculated tumor springing from the surrounding healthy mucosa. It bled easily and was not tender. On the hard palate were several characteristic syphilitic ulcers. Microscopical examination showed typical tubercular tissue with giant cells. Physical examination of the chest was negative. The patient was put on iodide in increasing doses. Within three weeks the ulcers had healed and the tumor had markedly diminished. A month later the granuloma had completely disappeared. The second case was that of a woman, forty-five years of age, who had lost flesh and had night sweats. For some months she had been troubled by nasal obstruction. Examination showed a pale red sessile mass on the cartilaginous septum without ulceration. There was no history of syphilis. Microscopical examination showed the ordinary structure of tubercular granuloma and giant cells, but no tubercle bacilli could be found. A course of treatment with mercury and iodide had no effect, and accordingly the growth was curetted. About eight months later the patient returned with a similar condition of the other nostril and in a similar site. The patient then gave evidence of tuberculosis of the lungs. It was possible to construe this case as one of primary tuberculosis of the nose. An interesting deduction was that the diagnosis could be made better by the consideration of the results of physical examination and treatment than by dependence upon his otological examination. The treatment of tubercular granulomata should be by thorough curettage.

(To be continued.)

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SELECTED ABSTRACTS.

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EDITORIAL STAFF.

The Role of the Nasal Fossæ in the Prophylaxis and Treatment of Pulmonary Tuberculosis—MAURICE MIGNON (Nice)—*British Congress on Tuberculosis for the Prevention of Consumption*, London, 1901.

When we consider the question of the prophylaxis of tuberculosis, we must recognize the fact that contagion takes place chiefly through the air. Air is the vehicle by which the microbes invade the organism far more frequently than foods, which can be sterilised by cooking. When the air is still infective, in spite of the use of spittoons, in spite of the practice of disinfection, in spite of every precaution intended to prevent the spread of the disease, the nasal fossæ are still capable of arresting the danger that threatens us. The microbes that enter with the air are, in a large measure, arrested by the cilia of the nasal vestibule and by the very extensive and very irregular surface of the mucous membrane. One may thus recognize the bactericidal function of the nasal mucus, although it has been questioned by some authors. Clinical experience teaches, indeed, that the nasal fossæ are much more resistant to tuberculosis than the rest of the respiratory tract, and even than the bucco-pharyngeal cavity. Insufficient nasal permeability (nasal obstruction from malformations of septal ridges, from hypertrophic or congestive rhinitis, from cysts, vegetations, adenoids, etc.), should therefore be reckoned among the dangers of tuberculous infection.

From the point of view of treatment the state of the nasal fossæ is of equal importance. As the nose allows more air to enter than the mouth, nasal insufficiency results in deficient oxidation of the blood, and everyone knows how necessary oxygen is to the tuberculous. Entering by the mouth the air brings with it harmful microbes, which, accompanied by dust, favor the malady. Moreover, the air, insufficient and injurious, is unmodified, either in temperature or in pressure; it provokes bucco-pharyngeal, laryngeal and tracheo-bronchial inflammations which impede the action of treatment.

It is therefore absolutely necessary that we should be satisfied that patients presenting themselves for examination (especially those disposed to tuberculosis, and those who are themselves tuberculous) are not suffering from any cause of nasal insufficiency. If any defect is present it should be remedied, as we should enjoin the patients to breathe solely by the nose as soon as they are able, for in this habit often plays a part. Instruction on the latter point should be included in the general advice which one makes a point of disseminating amongst all classes of the population. A. A.

An Unusually Large Polypus Presenting in the Pharynx—E. V. MILLHOLAND, M.D. (Baltimore)—*Maryland Medical Journal*.

History of a large tumor occupying almost the entire pharyngeal cavity, pushing the velum palati forward, dependent from the rhinopharynx, and reaching below the base of the tongue to the tip of the epiglottis. In order to see the tumor it was necessary to depress the base of the tongue, dislodging the tumor, and producing a spasm of the pharyngeal muscles with very alarming choking. Its lower end was broader than where it emerged from the naso-pharynx. Left nostril filled with characteristic pearly polypi, right free. Wire loop $1\frac{1}{2}$ inch in diameter was passed below the tumor and part removed through the mouth; the rest was taken, at another sitting, through the nostril, this piece being about as large as the first. Its origin was in the middle meatus. Treatment had only suggested itself two nights before when she felt a large lump in her throat preventing her from eating or sleeping, though nasal obstruction had troubled her for several months. The sudden descent into the rhino-pharynx explained the urgent symptoms.

F. C. E.

Some Observations and Remarks on the Air Currents in Nasal Respiration—CHARLES A. PARKER, F. R. C. S.—*Edinburgh Journ. L., R. et O.*, July, 1901.

In a very interesting paper in which the author details the methods employed in arriving at his conclusions he offers the following summary:

1. That during quiet inspiration in a normal nose the air traverses the middle, superior and probably the fourth, meatus.

2. The inspiration is impeded by:

(a) Spurs and deviations of the septum and enlargements of the inferior turbinals, if they project forward and upwards. (For practical purposes the rule may be formulated, that if such abnormalities cross and break an imaginary line drawn from the anterior extremity of the inferior meatus—i. e., just internal to the vestibule to the anterior end of the middle turbinal, they will cause obstruction.)

(b) Enlargements of the middle turbinated body, polypi, etc.

(c) Hypertrophies and growths springing from the vault of the naso-pharynx.

3. That in expiration the air traverses chiefly the inferior meatus.

4. That expiration will be more especially affected by:

(a) Hypertrophies of the posterior end of the inferior turbinals.

(b) Hypertrophies, etc., causing stenosis of the inferior meatus.

M. D. LEDERMAN.

An Operation for Saddle Nose—FRED. W. GWYER—*New York Annals of Surgery*, August, 1901.

The object in the correction of the deformity by the method advocated by the author is to employ tissue taken from either the organ itself or its immediate neighborhood. This is done by dissection, displacement and implantation. A somewhat elliptical incision is made on the dorsum of the nose and carried only through the skin, the enclosed part being removed. Then a flap composed of subcutaneous tissue and cartilage is dissected from below upward, leaving it attached about at the lower end of the depression. This flap is then turned upward and over so as to fit and fill in the depression. The skin is drawn together over this and sutured with horse hair.

STEIN.

The Influence of Mouth-Breathing Upon the Dental Arch—M.

D. LEDERMAN, (New York)—*N. Y. Med. Journ.*, July 13, 1901.

The dental surgeon frequently attempts to correct irregularities of the growing teeth, without advising the removal of the exciting factor. Nasal and post-nasal obstruction is the most common cause of mouth-breathing. Atmospheric pressure misdirected against the hard palate, plays an important part in the formation of dome-shaped arches, and narrowing alveolar processes.

The hanging of the lower jaw, dragging upon the facial muscles, brings a malign influence upon the superior maxilla. The slightest pressure can disturb the position of the erupting tooth—consequently, adenoids, enlarged tonsils and hypertrophic changes in the nasal chambers should be removed or corrected before any mechanical device be applied to the faulty growing teeth. By so doing these aids may act promptly, without being handicapped by antagonistic pressure through the open mouth.

Alkan has shown that in subjects where adenoid vegetations exist, the palatal arch is distinctly higher, longer and narrower than in the normal condition.

M. D. LEDERMAN.

The Future Treatment of Hay Fever—H. H. CURTIS, M.D.—*Med. Record*, July 13, 1901.

The author, after some clinical investigation, has found some success in the treatment of this distressing complaint, by the internal administration of the watery extract of flowers, principally rag-weed. The tincture and fluid extract are the solutions most available.

He also suggests from two to ten drops of the tincture or fluid extract of ambrosia artemisiæ folia, t.i.d., in water, during two weeks preceding the paroxysm.

The author publishes a few letters received from some of his patients. A few have been materially benefited by the liquor ambrosia, while others have not obtained much relief.

The "minimizing idea" is worthy of further clinical tests.

M. D. LEDERMAN.

Fractures of the Nose—MARSHALL CLINTON (Buffalo)—*Buffalo Med. Journ.*, June, 1901.

The disfiguring deformities are found in the cartilaginous framework. The cause of all fractures of the nose is direct violence. In the analysis of fifty cases, the commonest injury found was a fracture, dislocation of the three main cartilages. In true fractures of a cartilage an angular deformity exists similar to a greenstick fracture of a bone, and not an overriding of the fragments from muscular pull.

When a cartilage is fractured crepitus is readily detected in manipulation. Intra-nasal inspection will show a misplaced septum. If much external swelling exists we can wait three or four days for same to subside. In correcting any deformity with an elevator it is best to over-correct, and especially if an external dressing is applied. A careful plugging of a nostril with or without an external dressing will hold the cartilages in place.

Fractures of the bony portions of the nose are followed by a large amount of swelling and usually by emphysema of the neighboring soft parts.

An interesting case is reported in which the ethmoid was driven into the anterior fossa of the skull. The case recovered.

M. D. LEDERMAN.

Angina Ludovici—J. G. ROSS (Philadelphia)—*Annals of Surgery*, June, 1901.

Two cases of this serious disease are reported. In both instances the infection arose from diseased teeth.

Spontaneous cure by rupture of the abscess into the mouth may occur, but the majority will terminate fatally unless an operation is performed.

The symptoms develop rapidly, and are of great severity. Respiration and deglutition became difficult, and the latter almost impossible.

The disease is an infection of the thick layer of loose connective tissue, which fills in the space between the symphysis of the jaw and the muscles of the floor of the mouth. This tissue is rich in lymphatics and blood vessels, and contains the ducts of the sublingual and submaxillary glands. The disease may be primary or secondary, and the pathological findings in the second case reported indicate that the disease is in all probability erysipelas in character and the cases in an active surgical hospital should be isolated. (The abstractor treated a case of angina ludovici, resulting secondary to an acute suppurative otitis media, the infection being carried through the anterior cervical lymphatics. External manifestations were present together with sublingual edema and protrusion of the tongue. Liberal incisions into the sublingual tissues gave exit to considerable pus, and the patient made a fortunate recovery.)

M. D. LEDERMAN.

Some Remarks on Chronic Post-Nasal Discharge—T. J. HARRIS
(New York)—*The Post Graduate*, July, 1901.

The author calls attention to those cases, where hypertrophic changes are not in evidence, and yet post-nasal secretion exists.

The narrowing between septum and middle turbinal is a common cause of post-nasal discharge.

Disease of the accessory sinuses must always be considered in this class of cases. The middle turbinal when enlarged or displaced frequently obstructs the natural opening of the sinuses.

The treatment of condition consists in the removal in whole or part of the middle turbinated body.

M. D. LEDERMAN.

Some Observations on the Treatment of Hypertrophic Rhinitis—
CHAS. M. ROBERTSON—*Medical Age*, August.

The author considers the usually understood condition of intumescence or turgesence of the turbinals as a stage of hypertrophic rhinitis. As the condition of the first stage, or stage of vasomotor paresis persists, there is a fibroblastic organization takes place, resulting ultimately in a sclerosis of the newly organized tissue.

In considering the method of treatment these facts should be taken in mind. In the first stage either some form of medication to control the vasomotor blood supply may be used, or the dilated vessels destroyed by the use of the electro-cautery or some escharotic. In the second stage of true hypertrophy it is best to remove some of the redundant tissue, for which the author employs some cutting forceps, after which tampons of gauze saturated in hot sterile vaselin is used.

STEIN.

The Clinical Significance of Chronic Hoarseness and Loss of Voice
—P. WATSON WILLIAMS, M.D. (London)—*Bristol Medical-Chirurgical Journal*, September, 1901.

Inasmuch as simple hoarseness is not seldom the only symptom noticed by the patient in the earlier stages of some grave organic affections, and, as furthermore, a laryngoscopic examination often furnishes the one and only piece of evidence enabling the early diagnosis of such organic disease to be made and successful treatment to be carried out, ere it is too late. *Hoarseness which commences or persists without adequate and obvious cause should never fail to receive careful consideration, including a thorough inspection of the larynx.* The various conditions coming under the headings of catarrhal affections, chronic infective diseases, malignant growths and paralytic affections were reviewed in relation to the symptoms of hoarseness and loss of voice and the clinical import of the hoarseness in these diseases dwelt upon.

P. WATSON WILLIAMS.

The Physiology of Voice Production—M. A. GOLDSTEIN—*Medical Fortnightly*, September 10, 1900.

In this article the author has accomplished his purpose "of presenting a comprehensive outline of the physiology of voice production, based on facts not theories, and actual observation and not tradition."

He remarks that while the development of laryngology has been unusually active, the physiology of the vocal organs has remained in comparative obscurity, and the laryngologist must contend with prejudices and traditions which are nursed by *mæstros* and music teachers.

To his observation that there are few teachers or pupils that have ever seen a human larynx dissected, or observed the vocal cords during phonation, may be added the abstractor's experience that the utter ignorance of these individuals as to the laws of acoustics, especially those relating to vibrating strings and air columns, would render such anatomical and physiological demonstrations practically useless.

The author analyzes as the essential factors in the physiology of voice production: 1. *Motor force.* 2. *The vibration element.* 3. *The resonators.* After considering each in some detail, and in a very lucid style, he summarizes the essential features as follows:

1. All elements carefully considered, the best form of breathing applicable to voice production and singing is the rational combination of the costal with the diaphragmatic type. Reserve force in breathing is best attained by deep inspiration, fixation of the distended diaphragm and thorax, and control of these muscles while tone is produced.

2. To facilitate vocalization, the larynx should never be tightly contracted by the muscles of the throat, especially in the production of the upper registers.

3. On the resonating cavities, their proper conformation and position in relation to the vibrating cords and larynx, depends the quality and timbre of the voice, and the careful and proper placing of tones is perhaps the most essential factor in voice production.

EATON.

Tubercular Laryngitis and Pregnancy—A. KUTTNER (Berlin)—*British Congress on Tuberculosis for the Prevention of Consumption*, London, 1901.

The influence which pregnancy exercises on tubercular laryngitis has, until now, nowhere, or at any time, been thoroughly estimated. In the literature, distributed among four authors, are to be found seven cases which can be used to exemplify the clinical picture which results from the combination of pregnancy and tuberculosis of the larynx. There has, however, so far, been a failure to deduce from the comparison and critical study of the different cases any conclusions which, if not applicable to every single case, can yet furnish general rules for guidance. This want has surely cost many a sacrifice which could have perhaps been avoided by a better appreciation of the situation.

The purpose of this lecture is to offer a suggestion as to how this bad state of things can be practically remedied.

The material which the lecturer was able to bring to bear on the situation consists of fourteen minutely described cases, and about ten or twelve cases of which more exact details could not be brought forward. Of these fourteen cases seven have already appeared in medical literature; all the remaining data are based partly on the observations of the lecturer, and partly on inquiries which the lecturer has instituted amongst a large number of colleagues of wide experience. The lecturer feels himself specially indebted to Herm. B. Fränkel and Gusseron for kindly allowing reference to their observations.

The results of this investigation were as follows: An hereditary tendency is certainly not authenticated in all cases. With three women primary lung disease was clearly indicated before the beginning of pregnancy; in the eleven other cases there was no disease, or only a minimum, shown in the lungs. Laryngeal disease existed in one case before conception, in two cases it appeared in the sixth month, in eleven cases in the first half of gestation. Both in the case of first and later conceptions the disease appeared in the same way. One woman who had suffered earlier from laryngeal tuberculosis, with exceedingly slight affection of the lungs, and who remained quite free from every disorder for fully three years after her recovery, became ill again immediately after the onset of pregnancy.

No child was apparently carried to full time; three were born in nine months, eight in eight months, three in seven. All the children were born alive. As to the subsequent fate of five of these information is wanting; of two the lecturer can testify that they still live (one seven months old suffering from severe whooping cough, the second nearly two years old was healthy). Seven children died, some immediately after birth, some, at the latest, at three weeks old, thus making out of the nine children who came under the lecturer's notice, 77 to 78 per cent.

The fourteen women, about whom more exact details are to be had, all without exception, died, some immediately after parturition and some, at the least two months afterwards.

Of the cases not so exactly recorded almost all recovered, at least partly, after parturition. It will be a matter for a later inquiry to settle exactly what proportion of cases survive the period of a pregnancy complicated by the dangers of tubercular laryngitis.

The treatment usually undertaken locally has remained entirely unsuccessful.

The lecturer thinks he may draw from the examples sketched above the following deductions:

1. In women whose recovery is hopeless, tubercular laryngitis can only be treated by the usual local remedies or by performing tracheotomy.
2. In women whose general health is favorable one may, so long as the affection of the larynx is insignificant (a little redness or

slight ulceration), pursue an expectant plan. So soon as symptoms of infiltration show themselves, or the disease extends and becomes diffuse, one should acquaint the patient with the danger of her condition, and, after obtaining her consent, should perform tracheotomy as soon as possible, and if this does not act favorably in a few days, should induce premature labor.

The earlier the pregnancy is interrupted so much the more favorable are the chances for the mother; because the strain on the mother is less the smaller the fetus is. Besides, the loss of blood is usually less in a favorable abortion. From the seventh month of pregnancy onwards the prospects for the mother are worse, because complete exhaustion usually follows the strain of parturition.

It is advisable to perform tracheotomy in advanced laryngeal disease before parturition, or at least to hold oneself always in readiness to carry it out, in order to be able to obviate sudden asphyxia during the act of birth.

The Treatment of Tuberculosis of the Larynx—JOHN SENDZIAK

(Warsaw)—*Journ. Laryngol.*, May, 1901.

A historical review of the local treatment of this harrassing disease is given. M. Schmidt, of Frankfort, deserves the credit of placing the local treatment on a rational basis. Surgical treatment is an important factor towards eradicating the local manifestation of this infectious process. After a test of fifteen years, the lactic acid treatment continues to hold a foremost place, and is to be regarded as one of the best.

Local therapeutic remedies may be grouped in three divisions—the milder remedies, the more active and the palliative.

In the symptomatic treatment cocain has found a great rival in orthoform. The author claims that not only has it an analgesic action, but also a favorable action upon the tuberculous lesions themselves.

In the use of lactic acid we must begin with strong solutions (50 per cent), and quickly pass to the pure acid, which must be applied energetically by rubbing.

An efficacious remedy is *phenolum sulphuricum*, introduced by Rault, of Paris, and should be applied in 20 to 40 per cent solution. Parachlophenol is also recommended in 5 to 10 per cent solutions in glycerine. Menthol is of service in 10 to 20 per cent oily solutions by means of a laryngeal syringe.

M. D. LEDERMAN.

A Case of Paralysis of the Right Vocal Cord and the Thoracic Aneurism—B. T. BARON, M.B. (Edinburgh)—Bristol Medico-Chirurgical Journal, September, 1901.

A case of aneurism of the aorta is reported in which there was chronic hoarseness. Skiagrams are shown illustrating the aneurism, and demonstrating the growth in the size of the aneurism in the course of four months.

P. WATSON WILLIAMS.

Antitoxine and Intubation in the Treatment of Laryngeal Diphtheria, Etc.—B. R. SHURLY, M.D. (Detroit).—*N. Y. Med. Journ.*, July 13, 1901.

After picturing the anxiety experienced in the course of these cases, the author sums up as follows:

The results with antitoxin and intubation are most satisfactory, speedy and certain. He praises the inventive genius of Dr. O'Dwyer, and pleads for a wider field of its application.

M. D. LEDERMAN.

Unusual Dosage of Diphtheria Antitoxin—H. L. NIETERT (St. Louis).—*St. Louis Medical Review*, July 6, 1901.

It has been Nietert's custom at the St. Louis City Hospital to administer the antitoxin until he finds a shriveling of the membrane and palliation of the constitutional symptoms. In most cases 3,000 units have sufficed, that is when used reasonably early, say within the first 24 or 36 hours of inception. Some cases have required an additional 3,000 to obtain the desired results, and one case even required a total of 8,000 units. He details a case presenting the following interesting facts: 1. A total of 25,500 units of antitoxin were given without any ill effects. 2. The serum was less effective in the case, probably on account of the streptococcus infection in addition to the diphtheria infection. 3. Diphtheria bacilli were found in the abscess cavity. 4. There was rapid recovery after venesection and transfusion.

EATON.

Atresia Auris Congenita—HUNTER TOD—*Journ. Laryngol.*, March, 1901.

In a very interesting paper, accompanied by illustrations, the author reports three cases of his own, together with statistics of others.

He states that *auricular deformity* almost invariably accompanies total occlusion of the external meatus. If an artificial canal could be obtained in these cases, the ossicles at best would be found rudimentary.

The conclusions reached are as follows:

1. The deformity is not hereditary, and the cause is not known.
2. It occurs rather more often in females, and is more often unilateral than bilateral.
3. We may get accompanying deformities, chiefly due to mal-development of the parts in connection with the first and second bronchial arches.
4. The labyrinth is rarely affected. The hearing varies, but is present to some extent, though slight. Hearing tests give practically the same results as those in an uncomplicated middle-ear affection, but more marked.
5. Embryological, pathological and clinical observations prove operations to be useless.
6. Something more, perhaps, can be done by careful non-operative treatment and by early and assiduous instruction in speaking and lip-reading.

M. D. LEDERMAN.

Furunculosis of the External Auditory Canal—J. G. CONNALL—*Glasgow Medical Journal*, July, 1901.

The author discusses the pathology, symptoms and treatment of boils in the external auditory meatus. The chief point of interest in the paper, however, is the description of those cases of furunculosis which simulate mastoid disease and which are well illustrated in a number of figures in the text. It is sometimes extremely difficult to differentiate between a mastoid periosisitis and œdema over the mastoid arising from furuncular inflammation. The author lays stress upon the detection of a localized sensitive area in the meatus in the latter condition, and points out that the retroauricular groove, which is said to be obliterated in cases of œdema complicating a boil, sometimes is present in these cases.

A. LOGAN TURNER.

Varieties of Cholesteatoma—J. HOLINGER (Chicago)—*Pacific Med. Journ.*, July, 1901.

Two identical tumors, micro and macroscopically, are found in the human body.

First.—A rare tumor occurring in various parts of the body, mainly on the base of the brain and in the testicle. It usually gives no symptoms, but is an accidental find at post-mortems.

Second.—A tumor in the temporal bone.

The careful study of the anatomy and pathology of the temporal bone leaves no doubt that this kind of cholesteatoma is not rare, but a frequent condition often causing death by bringing the most infected material in contact with the lateral sinus, the dura and the pia. The most frequent avenue of entrance to the middle ear is through a perforation in the posterior upper quadrant of the membrana bordering on the annulus tympanicus, with necrosis of the adjoining bone. Bezold describes another road in cases where the whole or parts of the drum-head, especially Shrapnell's membrane, are retracted for years, as happens often in children with adenoids, or in cases of adhesion of the drum to the promontory so that sac-like excavations or diverticles will form. Here an inflammation or suppuration of the middle ear need not even have preceded.

The author holds that by far the greatest number of so-called incurable chronic suppurations of the middle ear are due to epidermization of its lining and to cholesteatoma. EATON.

Two Cases of Ligation of the External Carotid for Severe Hemorrhage—One after Tonsilotomy—Another after a Slight but a Fatal Operation—WM. W. KEEN (Philadelphia).—*Annals of Surgery*, July, 1901.

The author does not advocate indiscriminate ligation of the carotid in such complications, but states that the operation should be resorted to more frequently, and not be postponed too long. To ligate the common carotid when the bleeding vessel is a branch of the external carotid is an inexcusable surgical blunder.

Cerebral softening and death may result from depriving the brain of its circulation.

Both of the author's cases recovered promptly without unusual symptoms.

M. D. LEDERMAN.

The Operative Treatment of Abscess When Situated in the Brain
—CHARLES A. BALANCE (London)—*Journ. Laryngol.*, July, 1901.

In a scholarly article upon this subject the well-known author emphasizes the importance of early operation and the necessity of careful after-treatment in these cases. Personal attention to the wound after the operation is just as important for the ultimate recovery of the patient as the finding of the abscess itself.

The details of the operation are clearly described; attention being directed to the sterilization of the skin. Chloroform anesthesia is preferred, and the respiration must be carefully watched as same is apt to cease, especially in cases of cerebellar abscess. Neither morphia nor strychnia should be given before the dura has been opened.

A flap is to be preferred to a crucial incision. It should be cut with its base downwards and should be considerably larger than the base opening.

In commenting upon the size of the bone opening he states that failure may result from neglect of the rule of surgery to make free opening.

The trephine should be $\frac{5}{8}$ inch in diameter, of slightly conical shape and should have teeth outside.

In temporo-sphenoidal abscess the site of application of the point of the trephine should be about $\frac{7}{8}$ inch above the suprameatal spine, the object being to expose the lowest part of the middle fossa just external to the tegmen antri and tegmen tympani. Immediately above these tegmina are the tissues in which as a rule the infection develops. If the opening made by the trephine is not large enough same should be extended with cutting forceps, drill or saw, until a parallelogram measuring $1\frac{3}{4}$ inches antero-posteriorly and 1 inch vertically is formed. The lower edge of the parallelogram is marked by that of the trephine opening.

In operating for cerebellar abscess the trephine should be placed on the bone so that its anterior edge should be just below Reid's base line. In this way the horizontal and vertical portions of the sigmoid sinus are avoided.

In cutting through the dura mater a flap is preferable to a crucial incision—a small aperture should be made with a knife. If the abscess is subcortical an incision should be made through the intervening portion of brain with a knife and not with a trocar, as the latter is apt to pass through the abscess and no pus is evacuated. The best instrument is a sharp-pointed, long and narrow knife, as clean-cut wounds heal more readily than any others. There is less risk of the abscess being missed with such a knife than when any other instrument is used.

In abstracting this valuable paper it is impossible to do the author justice, and the abstractor commends the perusal of this article "in toto."

M. D. LEDERMAN.

An Untoward Occurrence in the Use of Suprarenal Gland—C.

BLOCH—*Medical Record*, July 6, 1901.

To prevent bleeding the author dusted some of the powdered extract into the nose of the patient before removing a synechia. On the following day the patient returned complaining of a pain in the throat and headache. On inspection œdema of the uvula and soft palate was seen, together with congestion of the pharynx and tonsils. A small ulceration (catarrhal) developed later. This healed promptly.

The gland had been previously applied to the same patient without any unpleasant reaction.

The author believes that the naso-pharyngeal blood vessels had contracted to such an extent as to cause venous stagnation peripherally.

M. D. LEDERMAN.

Cerebral Abscess; Operation; Recovery—FLETCHER GARDNER,

M.D. (Bloomington, Ind.)—*Med. Record*, August 3, 1901.

The patient was a male, twenty-one years of age, who had a suppurating ear (left) since he was four weeks of age. Symptoms of mastoid disease developed, and a Schwartza-Stocke operation was performed. Extensive disease was found.

Later on aphasia was noticed. The temperature was normal, but the pulse fifty to sixty. Ptosis of the left eyelid, slight paresis of the right foot and deviation of the tongue to the right were present. Tenderness over the head was not detected.

An operation for cerebral abscess was performed; the trephine-pin was placed $1\frac{1}{4}$ inches behind and the same distance above the external auditory meatus. A grooved director was passed through the dura opening in the direction of the ala of the opposite nostril. (This line is the axis of the tempora-phenoidal lobe.) At a depth of $\frac{1}{2}$ inch the abscess was opened. A drainage tube was introduced, after the cavity had been cleansed, and was fastened to the skin wound by a stitch. This tube was shortened from day to day. Recovery followed.

The surgical moral is that aphasia in the presence of ear disease calls for exploratory trephining.

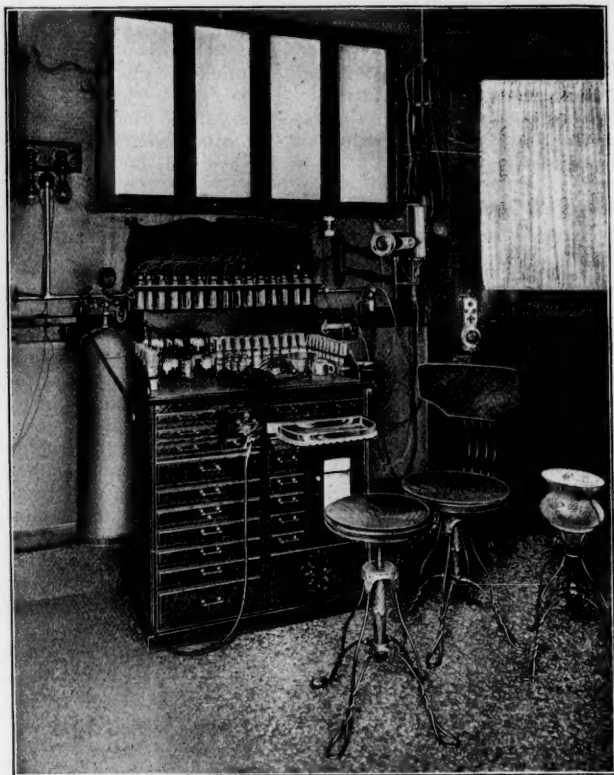
M. D. LEDERMAN.

The Rhinological Corner—EDWIN PYNEHON (Chicago)—*Medical*

Standard, October, 1901.

In the arrangement of the office for this purpose the darkest corner should be selected, as this is the best location for work done almost entirely by artificial light, and, furthermore, gives the advantage of two side walls within easy reach. A marble-top wash-stand with hot and cold water is almost a necessity and should be located against one of the walls, about two feet away from the corner. If the marble slab is of liberal size it will serve additionally as a table upon which soiled instruments can be laid.

For a right-hand operator both the gas or electric light fixtures and the instrument cabinet should be at the right of the patient and the light will thus illuminate the cabinet which is beneath it. Furthermore, by being at the patient's right, the light will not interfere with his use of the cuspidor on the opposite side.



The cabinet is the most important piece in the corner. It should not be so large as to be unwieldy, and it is the all-important work bench of the operator. The cabinet illustrated is made by the W. D. Allison Co., of Indianapolis, it being the outgrowth of several years' experience and study, and is designed to fill the wants peculiar to the practice of rhino-laryngology and otology.

In external dimensions this cabinet is thirty inches in length, twenty inches in depth and thirty-two inches in height. The top consists of a plate glass mirror. Above this is an ornamental back twenty-eight inches high. The back, a large bevel-edged mirror, supports a rack containing twenty-nine holes for spray or treatment bottles. Around the cabinet top is placed a series of loops for treatment vials. These vials are square, of two ounce size, and have medium wide mouths fitted with No. 3 rubber corks. The bottles intended for solutions of arg. nit. are made opaque by a coating of black varnish. Each bottle is kept covered with an inverted medicine glass, whereby the accumulation of dust upon the lip of the bottle is prevented.

There are nineteen drawers of different shapes and sizes and one compartment for clean towels, etc. This compartment is divided in two sections by a glass shelf. In addition to the drawers and towel compartment there is above the latter a drop door within which is a swinging glass tray which can be partially drawn out so as to serve as a shelf for instruments at a most convenient height when operating.

The small square drawer at top near the center is designed for cotton in front and syringes in the rear, as the dampness from the latter does not injure the cotton. Beneath the handle of this drawer there is placed a brass hook to hold the spray tube when not being used. At the top of this drawer is a sliding cover provided with a small opening for drawing small portions of cotton. This drawer when fully closed, locks sixteen of the smaller drawers and is itself locked by a fine Corbin non-pickable lock. The two right-hand drawers at top and bottom of cabinet and the towel cupboard are all *locked* with independent flat-keyed locks, which are operated by the same key. The lower drawer has perforations for ventilation, both front and rear, and is intended for soiled towels, napkins, etc. It works in an oiled and shellaced pigeon-hole so no dampness therefrom can extend to other portions of the cabinet.

The interior of all drawers, as well as of towel cupboard, is finished with a white enamel, and each drawer has a glass bottom so as to be as nearly aseptic as possible. Each drawer fits in a closed pigeon-hole. In this way no drawer is left exposed by opening or removing the drawer above it. Another advantage in having each drawer in a pigeon-hole is that the instruments cannot spring or tilt up above the drawer top so as to interfere with its being opened. The drawers vary in size and depth.

The chair, stool and cuspidor holder shown in the illustration were fully described in THE LARYNGOSCOPE for April, 1897. Of

course a fountain cuspidor in place of the one shown is even more desirable, though its considerable expense will preclude its general use.

The outlet to which the parallel gas bracket is attached should be 42 inches above the floor. If the gas bracket has a short third joint, say 5 inches in length, it will be found to be much more adjustable. Such bracket should be provided with both gas and electric light, which should be side by side or at the same height. For a gas burner I have for years used the "Niagara," and like it much better than the ordinary argand. The Welsbach lamp gives a beautiful and intensely white light, though the friability of the mantle is a great drawback and is most objectionable when used with an adjustable bracket, the motions of which give frequent and fatal jars to the mantle.

The gas burner had better be surrounded with an asbestos cover which may also carry a bull's eye condenser. Wall & Ochs, of Philadelphia, make an excellent cover of this kind. The use of the electric light in the past has had one disagreeable drawback, and that is the reflection of the lamp filament in the field of vision. Avery & Burrell, of Chicago, make a new electric lamp, shown in cut, which gives a strong and pretty light and in which this objection is overcome.

The compressed air tube should reach from the left end of the cabinet, and the writer has it attached to an auxiliary and pressure-controlling air-tank, which is shown in cut. The primary tank is not shown and can be placed in any convenient closet, or even in the cellar. It should be of about 30 gallons capacity.

For spray bottles, those made by the Davidson Rubber Co. are found to be the most satisfactory, though in place of their single stream right angle tip I use one throwing three streams which diverge in fan-shape. For nebulization, I employ single-hand nebulizers.

A. A.

Dust as a Factor in Diseases of the Upper Respiratory Passages—W. SCHEPPEGRELL (New Orleans)—*American Medicine*, April 6, 1901.

Microscopically dust is made up of vegetable, animal and mineral particles, which vary in size. The effects upon the organs of respiration are due to mechanical, traumatic, chemical and pathological changes.

Conditions arising from pathogenic causes are most frequently met with.

Certain occupations predispose the individual to injurious results. The author mentions the observations of Peacock, who found that forty (40) per cent of the workmen employed in a grindstone factory died of tuberculosis.

M. D. LEDERMAN.

Rhinology in Relation to Eye Diseases—J. JAMESON EVANS—*The Birmingham Medical Review*, September, 1901.

The author considers the most common mistake in ophthalmic practice, where the nose is implicated, is in connection with ethmoidal and lachrymal diseases and he has seen several cases treated for months as dacryocystitis where the source of the mischief lay entirely in the ethmoidal cells, the lachrymal trouble being secondary. On the other hand, ethmoidal diseases, in consequence of the absence of nasal symptoms, have been referred to the ophthalmic surgeon to have the minor lachrymal complaint attended to, an oversight which may have been attended with some danger. Both frontal and ethmoidal diseases have been mistaken for exostoses. In diseases of the sphenoidal sinuses an examination of the field of vision in conjunction with the use of the ophthalmoscope would aid the diagnosis. It would be a wise precaution to examine the nasal cavities and naso-pharynx in all cases diagnosed as retro-bulbar neuritis or retro-bulbar hemorrhage. Cyst in the floor of the orbit may be the first indication of a cystic sarcoma of the upper jaw. In many cases of epiphora the obstruction is due to intra-nasal disease involving the lower portion of the nasal duct.

P. WATSON WILLIAMS.

Report of a Case of Laryngeal Stenosis—I. A. AET—*Pediatrics*, June, 1901.

The patient, thirteen months old, admitted to hospital with symptoms of laryngeal stenosis. The smallest tube of O'Dwyer's intubation set could not be pushed down in position in the larynx without using an amount of force which seemed unjustifiable. Both the sitting and recumbent positions were tried, but to no avail. Tracheotomy was performed, but patient died in twenty-four hours. Attempts to introduce the tube after removal of the larynx proved futile.

STEIN.

The Influence of Impaired Hearing Upon the Development of the Child—F. A. POWELL—*Iowa Medical Journal*, September, 1901.

By not recognizing or paying proper attention to impaired hearing in children, the mind of the child, being deprived of its necessary cultivation, ceases to expand as it should. The disposition, through ridicule and harsh remarks, becomes sensitive and uncontrollable, and the general health, from want of exercise and fresh air, suffers more or less from malnutrition and malassimilation.

STEIN.

Otomycosis—FLETCHER GARDNER—*Wisconsin Medical Recorder*, Sept., 1901.

In one case cultures made from the white scales and yellowish spores found in ear canal showed the *aspergillus flavescens*. "This form of the *aspergillus* has never been met with in this country as an aural parasite," the author says. [Burnett reports having found it once in twenty-eight cases. S.]

Again, in a second case under the care of the writer, cultures showed a growth of *sterigmatocystis olivaceus*, said to have never been described as occurring in the ear.

STEIN.

An Unusual Ear Case—D. B. HAZELTINE—*The Clinique*, September, 1901.

In a patient of forty-five years the symptoms of nasal catarrh, accompanied with sense of fullness and noises and deafness in left ear, were complained of. In bending head forward a shifting sensation was experienced in the affected ear with improvement in the symptoms.

The drum membrane showed bulging above and retraction below. Incision over bulging area brought forth no fluid; nor did inflation by means of catheter improve matters. Not until Siegel's otoscope was employed was a quantity of fluid demonstrated with a corresponding improvement in hearing.

STEIN.

BOOK REVIEWS.

The International Directory of Laryngologists and Otologists. Containing the names and addresses of practitioners engaged in the study and practice of laryngology and otology. Compiled by RICHARD LAKE, F. R. C. S., London. In one neat foolscap 8vo. volume, pocket size, bound in flexible leather. 5s. net. Weight $\frac{1}{2}$ lb. Prix 6.50 frs. (cuire). Poids $\frac{1}{4}$ kilo. The price includes postage to any part of the British Isles. Orders from abroad must be accompanied by a remittance of 5s. (*plus the amount of postage* payable to the place of destination. This can easily be computed from the weight of the book given above). Rebman & Co., 129 Shaftsbury avenue, London.

The second edition of this directory has received much revision and has been considerably enlarged in the matter of the American Otologists and Laryngologists. There are still many errors and omissions. With the continued zeal of its editor, however, and the active co-operation from all sources, we hope to see the next edition improved in the matter of American addresses.

We most heartily commend this valuable little desk companion to our readers.

M. A. G.

CORRESPONDENCE.

HAMILTON, SCOTLAND, September, 1901.

EDITOR THE LARYNGOSCOPE :

At the end of an interesting paper by Dr. Jonathan Wright, in THE LARYNGOSCOPE of June, which has recently come to my notice, two cases are mentioned as being of epileptic nature and as naso-pharyngeal reflexes, resulting from palpation pradenosis. There was a slight convulsion in both cases. It may not be too late to call in question the epileptic nature of these attacks or the wisdom of dignifying them by the name of naso-pharyngeal reflex, and to ask whether they are not simply cases of fainting. It does not seem sufficiently recognized that a fainting attack often begins with a slight cry and a slight convulsion, as, indeed, one would expect in comparatively sudden cerebral anemia. I have repeatedly seen this happen both as the result of nasal interference and some slight surgical operation elsewhere. The cry or groan, the slight convulsion and the sudden unconsciousness give a superficial but striking resemblance to epilepsy, which, there is some reason to think, at one stage of the fit also involves cerebral anemia, but with which there is no further connection unless it be "neurotic temperament." [Dr. Leonard Hill has shown how sudden cerebral anemia produced by ligature of the cerebral arteries causes spasm.]*

One of my cases was an asthmatic, aged fifty, who had an attack similar to that described by Dr. Wright. The first time I interfered with his nose during cocainization and examination there was a groan, twitching of the face and the patient fell to the ground unconscious. He had not had enough cocaine to cause this and subsequently bore much larger doses, and as he gained confidence,

* Proceedings Royal Society, June, 1900

prolonged operative procedure without fainting. Another case, which might have been described in Dr. Wright's own words, happened during the incision of an abscess in the hand of a sturdy young man. There is no history of epilepsy or anything like it in either case, before or since, and there is, according to Dr. Wright, none in either of his cases. All are cases of fainting and are interesting as a clinical parallel to Dr. Hill's experiments. The three associated with nose and pharynx are not nasal or nasopharyngeal reflexes any more than the other is a hand-reflex.

I remain, yours truly,

JAMES HAMILTON, M. D.

